U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-260 388

Evaluation of Project Safeguard

Engineers, Inc, Newark, N J

Prepared for

Environmental Protection Agency, Washington, D C

1974

335141

PB 260 388

ENGINEERS Incorporated

Engineers / Constructors / Management Consultants

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

BIBLIOGRAPHIC DATA SHEET

1. Report No.

2.

3. Recipient's Accession No.

4. Title and Subtitle
Evaluation of Project XXXXXXX Safeguard

5. Report Date
XXXXX 1974

6.

7. Author(s)

8. Performing Organization Rept. No.

9. Performing Organization Name and Address
Management Services Division
Engineers Inc
Newark NJ

10. Project/Task/Work Unit No.

11. Contract/~~Grant~~ No.
68-01-2110

12. Sponsoring Organization Name and Address
U.S. Environmental Protection Agency
Office of Pesticides Programs
Wash DC

13. Type of Report & Period Covered

14.

15. Supplementary Notes

16. Abstracts

PROJECT SAFEGUARD is a joint effort of the EPA ES/USDA and the cooperative state extension services to train farmers, applicators, formulators, dealers, and medical personnel in the safe use and handling of the pesticide substitutes for DDT.

17. Key Words and Document Analysis. 17a. Descriptors

17b. Identifiers/Open-Ended Terms

17c. COSATI Field/Group

18. Availability Statement

19. Security Class (This Report)
UNCLASSIFIED

20. Security Class (This Page
UNCLASSIFIED

21. No. of Pages
109

22. Price
5.50-3.00

FORM NTIS-35 (REV. 10-73) ENDORSED BY ANSI AND UNESCO. THIS FORM MAY BE REPRODUCED USCOMM-DC 8265-P74

FINAL REPORT

EVALUATION OF
PROJECT SAFEGUARD
FOR
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDES PROGRAMS
WASHINGTON, D.C.

Prepared By:
Management Services Division
ENGINEERS Incorporated
50 Park Place
Newark, New Jersey 07101

Peter A. Cipriano, P.E.
President

John T. Hayford, P.E.
Vice President

Felix E. Massaro, P.E.
Project Director

TABLE OF CONTENTS

SECTION		PAGE
	ENGINEERS Incorporated's Letter of Transmittal	
I	SUMMARY	1
II	INTRODUCTION	3
III	REPORT OF RESEARCH	11
	A. Small Farmer Analysis	15
	B. Medical Personnel Analysis	24
	C. Poison Control Center/Hospital Analysis	33
	D. Applicator Analysis	40
	E. Dealer/Formulator Analysis	46
	F. Organizational Analysis	51
IV	CONCLUSIONS AND RECOMMENDATIONS	54
SUB REPORT		
	A. Pesticide Poisoning Accident Analysis	1
	B. Pesticide Legislation And Enforcement Analysis	6

SCHEDULE OF TABLES

PAGE

I - PROJECT SAFEGUARD Training and Promotional Materials 8

II - Small Farmer Counties' and States' Sample Size by State 16

III - Medical Source List References 25

IV - Medical Sample Size by State 27

V - Poison Control Centers and Hospitals Source List References 34

VI - Poison Control Centers/Hospitals Sample Size by State 35

VII - Applicator Source List References 41

VIII - Applicator Sample Size by State 42

IX - Dealer/Formulator Source List References 47

X - Dealer/Formulator Sample Size by State 48

XI - Pesticide Incidents From PASS Data 5

EXHIBITS

PAGE

I - PROJECT SAFEGUARD States 56

II - Farmer Questionnaire 57

III - Total Response to Farmer Questionnaire 58

IV - States' Responses to Farmer Questionniare, Question 1 59

V - States' Responses to Farmer Questionnaire, Question 2 60

VI - States' Responses to Farmer Questionnaire, Question 2A 61

VII - States' Responses to Farmer Questionnaire, Question 2B 62

VIII - States' Responses to Farmer Questionnaire, Question 2C 63

IX - States' Responses to Farmer Questionnaire, Question 2D 64

X - States' Responses to Farmer Questionnaire, Question 3 65

XI - States' Responses to Farmer Questionnaire, Question 4 66

XII - States' Responses to Farmer Questionnaire, Question 5 67

XIII - States' Responses to Farmer Questionnaire, Question 6 68

XIV - States' Responses to Farmer Questionnaire, Question 7 69

XV - States' Responses to Farmer Questionnaire, Question 8 70

XVI - States' Responses to Farmer Questionnaire, Question 9 71

XVII - States' Responses to Farmer Questionnaire, Question 10 72

XVIII - States' Responses to Farmer Questionnaire, Question 11 73

PAGE

XIX - States' Responses to Farmer Questionnaire, Question 12 74

XX - States' Responses to Farmer Questionnaire, Question 13 75

XXI - States' Responses to Farmer Questionnaire, Question 14 76

XXII - States' Responses to Farmer Questionnaire, Question 15 77

XXIII - States' Responses to Farmer Questionnaire, Question 15A 78

XXIV - States' Responses to Farmer Questionnaire, Question 15B 79

XXV - States' Responses to Farmer Questionnaire, Question 15C 80

XXVI - States' Responses to Farmer Questionnaire, Question 16 81

XVII - States' Responses to Farmer Questionnaire, Question 17 82

XXVIII - States' Responses to Farmer Questionnaire, Question 18 83

XXIX - States' Responses to Farmer Questionnaire, Question 19 84

XXX - States' Responses to Farmer Questionnaire, Question 20 85

XXXI - States' Responses to Farmer Questionnaire, Question 21 86

XXXII - Medical Questionnaire 87

XXXIII - Response to Medical Questionnaire, Questions 1 - 5 88

XXXIV - Response to Medical Questionnaire, Question 6 89

XXXV - Poison Control Center/Hospital Questionnaire 90

PAGE

XXXVI - Response to Poison Control Centers/Hospitals Questionnaire, Question 1 - 5 91

XXXVII - Response to Poison Control Center/Hospital Questionnaire, Question 10 92

XXXVIII - Applicator Questionnaire 93

XXXIX - Response to Applicator Questionnaire, Questions 1 - 10, 14 and 15 94

XL - Response to Applicator Questionnaire, Question 11 95

XIL - Response to Applicator Questionnaire, Question 12 96

XLII - Response to Applicator Questionnaire, Question 13 97

XLIII - Dealer/Formulator Questionnaire 98

XLIV - Response to Dealer/Formulator Questionnaire, Question 1 99

XLV - Response to Dealer/Formulator Questionnaire, Questions 2 - 7 100

ENGINEERS Incorporated EI
Engineers/Constructors/Management Consultants

14 March 1974
73MM037

Environmental Protection Agency
Office of Pesticides Programs
401 M. Street, S.W., E445
Washington, D.C. 20460

ATTENTION: Mr. Donald E. Ellison
Project Safeguard Manager

Reference: PROJECT SAFEGUARD

Subject: Evaluation of PROJECT SAFEGUARD

Gentlemen:

The enclosed final report is ENGINEERS Incorporated's "Evaluation of PROJECT SAFEGUARD." The Evaluation was authorized under Contract Number 68-01-2110 on 29 June 1973 by William B. Giller, Contracting Officer.

ENGINEERS Incorporated, (EI), wishes to express its appreciation for the fine cooperation it received from the Environmental Protection Agency, (EPA), the U. S. Department of Agriculture's State Extension Services', (ES/USDA), and the states' Advisory Committees or Boards of Directors personnel without whom the evaluation could not have been accomplished.

Please be assured that it has been a pleasure to be of service. We look forward to further opportunities to be of assistance.

Respectfully submitted,

ENGINEERS Incorporated

Felix E. Massaro

Felix E. Massaro, P.E.
Project Director

FEM:la

Environmental Protection Agency
Washington, D.C.

14 March 1974
73MM037

SECTION I

SUMMARY

EI's evaluation of PROJECT SAFEGUARD indicates that PROJECT SAFEGUARD achieved the following results within its defined target groups:

1. Most of the small farmers are highly aware of the potential hazards associated with the use of the toxic replacements for DDT.

   They gained their knowledge of the dangers chiefly through the Safety Aide Programs, ES County agents, EPA literature, mass media, pesticide containers' labels and general experience.

2. Most dealers, commercial applicators and formulators are very knowledgeable of the inherent dangers to the users of highly toxic pesticides.

   They passed this information on to their customers, the users.

   The knowledge was largely derived from EPA literature, manufacturers' literature and representatives and the State Extensive Service Staff.

3. Most dealers do not sell safety equipment to be used in conjunction with the handling, mixing, application and disposal of organophosphate pesticides.

4. The majority of poison control centers, hospitals, physicians and veterinarians received the EPA booklet. A significant number of those who did receive the booklet found its contents helpful in diagnosing and treating organophosphate poisonings.

Most medical respondents are of the opinion that there has been no significant increase in pesticide accidents in 1973.

5. A slight increase in pesticide accidents is reported for 1973 in the 15 PROJECT SAFEGUARD states. Records of EPA's Pesticide Accident Surveillance System show 332 accidents in 1972 vs. 365 in 1973. The 1973 figure was extrapolated from totals of the first 11 months to cover the full year.

   PASS' data shows a much greater increase in pesticide episodes in the PROJECT SAFEGUARD states from 1971 - 1972 compared to 1972 - 1973. The totals were 128 for 1971, 332 for 1972 and 365 for 1973. This represents an increase of 159 percent from 1971 to 1972 versus 10 percent from 1972 to 1973. EI believes that safety information distributed by PROJECT SAFEGUARD must be given credit for a major portion of the reduced rate of increase of pesticide episodes for 1972 - 1973. This fact is especially impressive because the increased level of awareness of potential pesticide poisoning would logically lead to an increase in reported incidents.

6. The 15 states in PROJECT SAFEGUARD have pesticide registration laws. In addition, 11 have laws regulating applicators. However, in 8 of these 11 states' the laws do not cover farmer use of pesticides.

7. The new Federal Insecticide, Fungicide and Rodenticide Act, has not, as yet, adopted standards for the licensing and certification of commercial and private users of pesticides. However, specific wording in the body of the Law under Unlawful Acts, Section 12a (2G) states that "It shall be unlawful for any person to use any registered pesticide in a manner inconsistent with its labeling." Under this section of the Law, one case each is being investigated in EPA Regions III and V.

SECTION II

INTRODUCTION

PROJECT SAFEGUARD is a joint effort of the EPA ES/USDA and the cooperative state extension services to train farmers, applicators, formulators, dealers, and medical personnel in the safe use and handling of the pesticide substitutes for DDT. The program was created in June of 1972 in anticipation of the forthcoming cancellation of the general use of DDT in the United States on December 31, 1972.

For many years, DDT was the most widely used chemical pesticide in the United States. DDT was first synthesized in 1874 by a German chemist. Sixty-five years later in 1939, J. R. Geigy, a Swiss chemical company discovered its insecticidal properties and DDT was used extensively during World War II by the military. After the war it gained general use as an agricultural pesticide, especially on cotton, soybean and peanut crops because it was economical and effective.

In 1969, the USDA investigated the long term hazards of DDT to man and his environment. Findings of the investigation resulted in restrictions on the widespread use of DDT. In 1971, the EPA joined the review of DDT's deleterious effects on the environment. It was concluded in the opinion of the administrator Stevens Industries, Inc. et al I. F. and R. docket numbers 63 et al that DDT accumulated in the fatty tissue of animals and humans, that it was persistent and could be a serious long term threat to the health of humans and animals. In June, 1972, the administrator of the New Jersey Environmental Protection Agency announced the cancellation of the general use of DDT effective December 31, 1972. In order to accomplish a smooth transition to substitute products and practices the EPA made the cancellation effective December 31, 1973.

The primary substitutes for DDT are organophosphate pesticides. They are highly toxic and pose an immediate threat if improperly used to the health and life of the user, his loved-ones and his livestock. DDT was simple and easy to use, offering little risk to the user, but its replacements cannot be applied using the same techniques without risk of severe organophosphate intoxication.

PROJECT SAFEGUARD utilized the time of the transition period and the balance of 1973 to counteract the potential hazards accompanying the use of the highly toxic pesticides. The major aim of the program is to:

1. Create a profound awareness on the part of the farmer, dealer, formulator, applicator and medical personnel of the potential hazards associated with the use of the highly toxic DDT replacements.

2. Educate and train users of organophosphate pesticides on the techniques for safely handling, mixing and applying these chemicals.

A survey was conducted by ES/USDA to determine in what part of the country and to what target groups would additional instruction, beyond the ongoing programs of the Extension Service, be most beneficial in teaching the correct use of toxic pesticides. Broadly, the target groups chosen were farmers, dealers, formulators, applicators and medical personnel. It was decided to concentrate on farmers who raised cotton, soybean and peanut crops as these farmers were the largest users of DDT and therefore were the least likely to have previous experience or knowledge of the more toxic pesticides. Further, it was decided to aim at the smaller farms, 30 acres or less, because this group was probably less sophisticated in its knowledge of organophosphate-use technology and did not generally participate in Extension Service programs to the same extent as the larger farmers.

The states which produce the preponderance of the U. S. output of cotton, soybean and peanuts, crops which traditionally used the most DDT, were chosen as the target areas. The states are; Virginia, South Carolina, North Carolina, Georgia, Florida, Tennessee, Kentucky, Alabama, Mississippi, Arkansas, Texas, Louisiana, Oklahoma, and Missouri.

New Jersey was added to this group even though its agricultural profile does not agree with the previously mentioned criteria. The Health Department showed that many growers and farm workers in New Jersey have lowered cholinesterase levels during the growing season. Coincidentally, organophosphate pesticides have been used in greater quantities in New Jersey in recent years. It was reasoned that this might indicate a lack of understanding of the dangers inherent in the use of these chemicals by the farmers. As a result, New Jersey was included in the PROJECT SAFEGUARD Program. The 15 states of PROJECT SAFEGUARD are shown in Exhibit I.

The EPA and the ES/USDA agreed to jointly fund the program. The appropriate monies were apportioned among the 15 states in proportion to the size of its small farmer group. EPA granted funds through the Department of Health, Education and Welfare to the U. S. Jaycees for efforts to be contributed to the program by local Jaycee chapters. The main function of the Jaycees was to cooperate and carry out various assignments as mutually agreed upon with the respective states' Extension Services.

The individual state programs to implement PROJECT SAFEGUARD were very similar. Local people were hired and paid through the states' Extension Services to serve as Safety Aides. Virginia called its aides Safety Technicians. The job of the Safety Aides/Technicians was to carry the PROJECT SAFEGUARD message to the farmer target group on a face-to-face basis. Three hundred and forty-three were employed in 12 of the 15 "Safeguard" states. They were generally trained by the state and county extension personnel and EPA Project Managers. The Safety Aide Program made its first field contacts early in 1973 and finished its field work late in the year. Three of the states; Florida, Kentucky, and Oklahoma, did not use Safety Aides in their farmer contact activities. They decided to use their allocated funds to supplement and intensify their ongoing educational programs on the safe use of pesticides and to make fuller use of the mass media. All of the PROJECT SAFEGUARD states generated mailings to their target groups of their own pesticide safety and warning literature which supplemented the literature distributed by the EPA headquarters.

Contact with the target groups started off with two press releases sent from EPA Headquarters, Washington, D.C. to generalized outlets in the target areas in December 1972 and January 1973, respectively. Table I shows the complete schedule of the training and promotional materials distributed by the Washington, D.C. Headquarters of EPA. No attempt was made to document the quantity and variety of materials available from other sources which were utilized in PROJECT SAFEGUARD. These sources included; NACA, USDA and the Cooperative State Extension Services.

TABLE I

PROJECT SAFEGUARD TRAINING AND PROMOTIONAL MATERIALS

	ITEM	NUMBER	STATUS
1.	Press Release	2	Sent to generalized print media in target area
2.	Farmer Mailer		
	1st Mailing	110,000	Direct Mailing
	2nd Mailing	110,000	Direct Mailing
	3rd Mailing	170,000	Mailed to farmers by county agents
3.	Dealer Mailer		
	1st Mailing	9,000	Direct Mail
	2nd Mailing	9,000	Distribution to Dealers by county agents
4.	Medical Mailer (Physicians, hospital administrators, emergency room supervisors)	100,000	Mailed to EPA Regional Offices for distribution to Medical Personnel
5.	Veterinary Mailer	12,000	Mailed to EPA Regional Offices for distribution to Veterinarians
6.	Emergency Response Personnel Mailer	3,000	Mailed to EPA Regional Offices
7.	Safety Handbook	5,000	Mailed to State Extension Service Project Leaders and EPA Regional Offices
8.	Instructor Handbook	250	Mailed to State Extension Service Project Leaders and EPA Regional Offices
9.	Jaycee Project Safeguard Information Kits	2,100	Mailed to local Jaycee Chapters in target area

TABLE I (CONT'D)

	ITEM	NUMBER	STATUS
10.	Warning Poster	350,000	Mailed to EPA Regional Offices and State Extension Services
11.	Point of Purchase Poster	10,000	Mailed to EPA Regional Offices for distribution by State Extension Services
12.	Farmer/Laborer Handout		Mailed to EPA Regional Offices for distribution by State Extension Services
	1st Mailing	10,000	
	2nd Mailing	150,000	
13.	Spanish Farmer/Laborer Handout	50,000	Mailed to EPA Regional Office VI (Texas) for distribution by State Extension Services
14.	Project Safeguard Movie	40 Prints	Mailed to State Extension Service Project Leaders and EPA Regional Offices
15.	Slide Set	100	Mailed to State Extension Service Project Leaders and EPA Regional Offices
16.	Radio Spots	501	Mailed to radio stations in target areas
17.	Certificates of Appreciation	2,000	Mailed to EPA Regional Offices and to State Extension Services

In March of 1973, while PROJECT SAFEGUARD was at work in the target areas, a decision was made to evaluate the effectiveness of the Project. Had the hoped for goals been achieved? Had the target groups absorbed the knowledge? Had the pesticide poisonings increased since the banning of DDT? It was decided to use an organization independent of the states or Federal Government in order to preclude bias.

In June of 1973, EI was awarded the contract to evaluate PROJECT SAFEGUARD. EI's approach to the evaluation was to reduce the problem to three stages:

1. Determine whether or not the target groups were aware of the "Safeguard" message.
2. Determine the frequency, types, severity and causes of deaths, illnesses and accidents resulting from pesticide poisoning.
3. Determine if pertinent Federal and State laws deal adequately with the problems associated with the use of toxic pesticides and the extent to which the laws are enforced.

Work on the evaluation was started in June of 1973. The report of the work and the conclusions reached follow.

SECTION III

REPORT OF RESEARCH

EI decided to ascertain the degree to which the target groups retained the messages of PROJECT SAFEGUARD by soliciting statistical samples of each group through questionnaires. Discussions with state representatives of EPA and ES/USDA reinforced EI's conclusion that the farmer sample respondents should be solicited by personal interview. The dealers, applicators, formulators and medical personnel were polled by direct mail questionnaires.

A review of official sources of pesticide accident statistics was used as a basis for guiding the determination of the frequency, types and severity of poisonings in the target areas. Certain questions in the medical and hospital questionnaires were aimed at unofficial views of the level of pesticide episodes before and after PROJECT SAFEGUARD.

A survey was made of relevant state and Federal laws and their enforcement to appraise the efficacy of the laws in dealing with the problems of pesticide poisoning.

The design of the questionnaires for each target group proceeded as follows:

1. Farmer

All of the literature in Table I pertaining to the small farmers was reviewed to define the message which PROJECT SAFEGUARD directed at them. The major guide in the design of the Farmer Questionnaire was the "Safety Handbook" for safe pesticide practices. Questions derived from the review of the 12 instructional lessons contained in the handbook were formulated to measure the knowledge in the small farmer group as to:

a. General awareness of the dangers involved in the handling, use and disposal of highly toxic pesticides.

b. The need for protective clothing while handling, mixing and applying toxic pesticides.

c. Personal habits that could be hazardous when using organophosphate chemicals.

d. Ability to identify symptoms of pesticide poisoning.

In addition, questions were inserted to determine the time frame when this knowledge was acquired.

2. Applicator and Dealer/Formulator

The questionnaire for the commercial applicators of pesticides was designed to measure the level of understanding of safe handling and application and to identify the sources of this knowledge. The applicators and dealers/formulators are instrumental in transmitting their knowledge to the small farmer group because the farmers deal directly with them and recognize them as professionals. It was important to define the sources of that knowledge. Dealers/Formulators were questioned to determine the extent to which they transmitted knowledge of the proper use of toxic pesticides to the farmers.

3. Poison Control Center/Hospital and Medical

The information that was to be extracted from these groups was basically:

a. Did EPA literature reach them, particularly the booklet entitled "Diagnosis and Treatment of Poisoning by Pesticides?"

b. Was the information in the booklet useful to them?

c. Did they believe that the information in the pamphlet needed expanding?

The questionnaires solicited statistical information on pesticide poisonings.

County, state and Federal EPA and ES/USDA representatives reviewed and recommended changes and reinforcements in the questionnaires. Their field experiences in the early phases of PROJECT SAFEGUARD were invaluable in developing viable documents.

The finalized questionnaires were submitted to the Office of Management and Budgets. They were approved and were assigned an OMB form number. The questionnaires used in EI's field work are shown in Exhibits II, XXXII, XXXV, XXXVIII and XLII.

Previous experience in this type of activity and opinions expressed by EPA and ES/USDA personnel indicated that there would be a high level of knowledge on the part of the contacted target groups. On this basis, a 94 percent response mode was assumed at a tolerance level of ± 1 percent. A sample size of 600 was selected from Mildred Parten's text "Surveys, Polls and Samples" by referring to the table of sample sizes on Page 309 using the previous parameters. It is interesting to note that at an awareness level of only 50 percent (the worst possible condition) the tolerance level would be ± 2 percent. Essentially, the established sample size will give us an estimate with an assurance of 95 percent that the results will be within 2 percent of the true value.

In each target group the total population consisted of the sum of each states' contribution. To assure each state its fair representation in each target group, the sample size of 600 was apportioned among the states based on the ratio of its contribution to the total population.

A. Farmer Analysis

The farmer target group consisted of approximately 195,000 farmers involved in PROJECT SAFEGUARD. Table II shows each state's pro-rated representation in the total sample.

Two counties from each state were randomly selected to insure that enough names were available in the event unforeseen circumstances restricted using the primary selected county. The names of the counties used in the sampling are shown in Table II. The names of the farmer contacts in these counties in each state were submitted to ENGINEERS Incorporated by EPA and ES/USDA state representatives.

As previously explained, it was decided to interview the farmer group on a person-to-person basis. To do this, ENGINEERS Incorporated contacted state Extension Service county offices for assistance in hiring persons who could perform the field surveys. EI's field representatives went to the selected counties and met with the prospective farmer interviewers.

The goals of PROJECT SAFEGUARD and the purpose of its evaluation were explained to the interviewers. The EPA slide presentation entitled "PROJECT SAFEGUARD" was

TABLE II

SMALL FARMERS COUNTIES AND SAMPLE SIZE BY STATE

STATE	SELECTED COUNTIES	ESTIMATED NUMBER OF FARMERS IN PROJECT	% OF PROJECT FARMERS	STATE SAMPLE SIZE
Alabama	Lawrence	24,831	12.7	76
Arkansas	Lawrence	8,846	4.5	27
Florida	Gilchrist	9,728	5.0	30
Georgia	Telfair	16,900	8.7	53
Kentucky	Todd	6,691	3.4	21
Louisiana	Lafayette	6,000	3.1	19
Mississippi	Lafayette	26,345	13.6	82
Missouri	Pemiscot	3,350	1.7	10
New Jersey	Monmouth	1,500	0.8	5
North Carolina	Edgecombe	44,520	22.9	138
Oklahoma	Beckham	5,000	2.6	16
South Carolina	Darlington	7,000	3.6	21
Tennessee	Hardin	22,600	11.6	70
Texas	Hunt	6,453	3.3	20
Virginia	Pittsylvania	4,774	2.5	15
Totals		194,538	100.0	603

shown to them. In addition, the Farmer Questionnaire was reviewed in detail. It was stressed that in asking the Farmer the various questions, the interviewer must avoid any tendency to lead the respondent. Sufficient questionnaires were left with the interviewers to cover the state's sample size contribution. Stamped, self-addressed envelopes were given to them for the rapid return of completed farmer interviews to EI's Newark offices.

Each state's interviewers returned all of their assigned farmer interview questionnaires except for North Carolina where the interviewers employed by EI were able to complete only approximately 50 percent of the face-to-face solicitations. As a consequence, EI selected 5 percent of the non-respondents by use of a table of random numbers and contacted this group by telephone. The results of these interviews were then pro-rated and combined with the results of the original respondents to yield a final small farmer response for North Carolina.

Analysis of the farmer data revealed an interesting point. The first question asked if the farmer knew that the highly toxic pesticides were more dangerous to him than DDT. Questions 2 and 3 asked how and when he found out about the dangers. It was expected that the answers to Questions 2 and 3 would be blank if Question 1 was answered negatively. The results showed a contradictory condition. Twenty-two percent of the farmer respondents said that they did not know that the toxic pesticides were more dangerous to them than DDT. However, in response to Questions 2 and 3, 33 percent of this group stated that they learned of the dangers through various media and in specific years.

To resolve the dilemma a secondary telephone survey was conducted among a 20 percent sample of randomly chosen members of the group. It showed that there were two reasons for the original contradictory responses:

1. Four of them had been so alarmed by the anti-DDT publicity that they had come to believe that DDT was the most dangerous of the pesticides.
2. Five of the group stated that they were expressing an opinion by their negative responses. Effectively, they were protesting the ban on DDT.

The farmer data was corrected for this obvious bias. Fifteen percent of the farmers responded negatively and logically to Question 1. Yet, they scored equally as high as those who answered positively to Question 1 on the rest of the questions relating to knowledgeability of the proper use, handling and disposal of toxic pesticides. This condition is consistent with the normal expectations of most teaching experiences where the original exposure is of very short duration. We have all experienced the enigma of having knowledge of some fact and not remembering how or when we became aware of it.

The balance of the Farmer Questionnaire analysis is relatively straight-forward and the farmers' answers to the questions follow sequentially.

1. Of them, 85.7 percent were aware that the highly toxic pesticides are more dangerous than DDT.
2. The knowledge of the dangers associated with the use of toxic pesticides was obtained from the following sources:
    a. Mass Media - 25 Percent
    b. Safety Aides or County Agents - 22 Percent
    c. Labeling - 18 Percent
    d. Experience - 14 Percent
    e. Didn't Know - 21 Percent
3. Of those who reported the year in which the knowledge was acquired the breakdown was:
    a. 1973 - 46 Percent
    b. Before 1973 - 54 Percent
4. 92.5 percent knew that pesticides should only be stored in original containers.
5. 98.2 percent said that empty pesticide containers should not be reused.
6. 92.4 percent thought that rinsing, crushing and burying empty pesticide containers was the proper way to dispose of them.

7. 98.6 percent said that pesticides should not be stored in the same quarters as food and livestock.

8. 94.5 percent agreed that pesticide storage areas should be locked or secured.

9. 97.2 percent thought that it was a good idea to have soap and water readily available when workers are mixing and working with toxic pesticides.

10. 95.1 percent disagreed with the suggestion that it was safe to dump excess mixtures of pesticide on the ground.

11. 99.8 percent thought that pesticides could enter the body orally.

12. 98.9 percent thought that pesticides could enter the body by dermal exposure.

13. 94.5 percent thought that pesticides could enter the body by respiratory exposure.

14. 97.2 percent knew that protective clothing and safety equipment should be worn while using toxic pesticides.

15. When asked about the advisability of wearing certain protective clothing during the use of toxic pesticides, the results were:

    a. Long Sleeve Shirt - 97.8 Percent, Yes

    b. Wide Brim Hat - 93.7 Percent, Yes

    c. Rubber Gloves - 97.2 Percent, Yes

    d. Waterproof Boots - 92.4 Percent, Yes

16. 98.2 percent said it was poor practice to smoke while using toxic pesticides.

17. 98.0 percent agreed that it was a good idea to change clothes every day when using pesticides.

18. 97.4 percent knew pesticide protective clothing should not be washed with the rest of the family laundry.

19. 98.3 percent thought it was a good idea to make other people aware of your whereabouts if you're alone while using toxic pesticides.
20. 98.3 percent were aware that pesticides should not be applied on a windy day.
21. 99.3 percent said that it was a good idea to see a doctor immediately if you become ill after using highly toxic pesticides.

The farmer survey strongly reinforces the need for the PROJECT SAFEGUARD Program. Forty-six percent of the sample or 89,500 farmers from the small farmer target group were unaware of the dangers of toxic pesticides prior to the program. This points out the foresight of those involved in the conceptualization and implementation of PROJECT SAFEGUARD.

The survey shows that the small farmer target group retained "Safeguard's" basic message very well, that is:

> The highly toxic DDT substitutes are hazardous unless proper techniques are employed when handling, mixing, applying and storing them.

EI's original estimate that the average percentage of response (positive or negative) would be 94 percent correlated very closely with the actual of 96 percent. This means that there is a 95 percent assurance that the survey's data is correct within 2 percent tolerance for the sample size of 600.

An interesting sidelight of the farmer study exists with respect to primary, secondary and tertiary knowledgeability of toxic pesticides. The responses to the questions were grouped according to three broad classifications and the average percent correctness of response was calculated:

1.	Knowledge of dangers associated with use of toxic pesticides.	98.8%
2.	Knowledge of safe techniques in handling toxic pesticides.	97.5%
3.	Knowledge of proper methods for storage and disposal of toxic pesticides.	93.4%

It is apparent that "Safeguard's" greatest impact upon the small farmers was with respect to the health hazards associated with the use of the more toxic pesticides. An examination of the literature and information aimed at this target group shows that it was heavily oriented towards the hazards of the DDT replacements. Future programs should concentrate on educational activities directed towards proper methods of handling, storing and disposing of the toxic pesticides and empty containers.

As previously stated, the major difference between the individual states' programs was that three states, Florida, Kentucky, and Oklahoma did not use Safety Aides. EI believes that the sum of the samples drawn for these states, 67, is large enough to yield a valid comparison in the PROJECT SAFEGUARD impact on the small farmer target group between the Safety Aide vs. Non-Safety Aide states. To do this, EI calculated the average, total correctness of response of the combined Safety Aide and combined Non-Safety Aide states with respect to the Farmer Questionnaire. The results are:

CATEGORY	CORRECTNESS OF RESPONSE
Safety Aide States	94.5%
Non-Safety Aide States	97.9%

EI considers the differential of 2.5 percent to be insignificant and that the value of either technique must be evaluated by factors not considered in this study.

Exhibit III graphically depicts the total small farmer response to each of the questions of the Farmer Questionnaire. Exhibits IV through XXXI show the individual states' responses to each question.

B. Medical Personnel Analysis

The statistical sample for the medical group consists of physicians and veterinarians. The source lists were obtained from various state medical associations and mailing lists supplied by EPA. Table III shows the medical source list references by state. The reference material contained 70,000 practitioners and non-practitioners both in-state and out-of-state residents.

EI edited the reference lists to include 20,580 names of practitioners in the PROJECT SAFEGUARD counties. The percentage of each state's contribution to the total number of practitioners on the edited source list was calculated and was used to derive the individual state's sample size, as shown in Table IV. A breakdown of the edited source lists indicated that 90 percent of the doctors were physicians and 10 percent were veterinarians. The randomly drawn sample of 600 names reflects the 90/10 ratio and was selected from the edited source list using a table of random numbers. The EPA regional offices or the State Extension Services had mailed PROJECT SAFEGUARD information to physicians and veterinarians in their area. In addition to letters explaining the purpose of the project, brochures explaining the diagnosis and treatment of poisoning by pesticides were included.

TABLE III

MEDICAL SOURCE LIST REFERENCES

STATE	
Alabama	The Medical Association of the State of Alabama, Roster 1972.
	Alabama Graduate Veterinarians
Arkansas	American Medical Association 1972
	IBM Printout
Florida	Florida Medical Directory 1972
	List of Florida Accredited Veterinarians 7/72
Georgia	Register of Physicians of Georgia 1972
	Roster of Registered Veterinarians of Georgia
Kentucky	Kentucky Medical Directory 1972
	Directory of Kentucky Veterinary Medical Ass'n. 1972
Louisiana	American Medical Association 1972
	EPA List
Mississippi	Mississippi Directory of Physicians 1973
	Mississippi Board of Animal Health, Graduate Veterinarians Licensed
Missouri	Medical Doctors and Osteopaths in 8 County Areas Area Veterinarians in 8 County Area
New Jersey	Medical Society of N.J. Membership Directory 1972 - 1973.
	New Jersey Bell Telephone Directories
North Carolina	Roster of Registered Physicians in the State of N.C. March 1, 1972
	U.S.D.A., Animal, Plant and Veterinary Services 11/71

Oklahoma	American Medical Association Directory 1972
	EPA List
South Carolina	IBM Printout submitted by EPA Office
	S.C. State Board of Health list of practicing DVM 1972.
Tennessee	Directory of Doctors of Medicine Licensed in Tennessee, May, 1971.
	Tennessee Veterinarians
Texas	IBM Printout Submitted by EPA Office
	EPA List
Virginia	Roster of Practitioners of the Healing Arts, Licensed and Registered in the Commonwealth of Virginia, Fiscal Year 1972 - 1973.
	Commonwealth of Virignia, Virginia State Board of Veterinary Examiners, 1972.

TABLE IV

MEDICAL SAMPLE SIZE BY STATE

	ESTIMATED NUMBER DOCTORS & VETERINARIANS IN PROJECT SAFEGUARD AREA	PERCENT OF SAMPLE	SIZE OF SAMPLE
Alabama	594	2.9	18
Arkansas	750	3.6	22
Florida	877	4.3	24
Georgia	4,550	22.1	130
Kentucky	582	2.8	17
Louisiana	308	1.5	9
Mississippi	1,629	7.9	48
Missouri	139	0.7	5
New Jersey	5,270	25.6	154
North Carolina	1,317	6.4	39
Oklahoma	450	2.2	12
South Carolina	427	2.1	13
Tennessee	1,544	7.5	45
Texas	143	0.7	5
Virginia	2,000	9.7	59
Totals	20,580	100.0	600

The Medical Questionnaire was developed to evaluate the effectiveness of the program in the medical field. It was designed to determine if the materials reached the medical group and if they found the information helpful.

The Medical Questionnaires, Exhibit XXXII, were mailed to the selected sample names with stamped, self-addressed envelopes. The first mailing produced a response of 16.7 percent. A second mailing to the non-respondents was made when the returns from the first mailing tapered-off, approximately two weeks after the first mailing. It yielded a response of 18.3 percent.

When the second mailing tapered-off a randomly drawn sample of 5 percent of the non-respondents was solicited by telephone using the Medical Questionnaire. The results of the telephone solicitations were pro-rated and combined with the results of the mail-returned Medical Questionnaires.

Analysis of the data collected from the Medical Questionnaire showed that among the target group of physicians and veterinarians:

1. 51.3 percent received the EPA letter informing them of PROJECT SAFEGUARD and its goals.

2. 53.0 percent received the booklet entitled "Diagnosis and Treatment of Poisoning By Pesticides."

3. 20.4 percent who received the booklet found it helpful in the diagnosis and treatment of pesticide poisoning.

4. 5.8 percent of those who received the booklet said that they were personally associated with patients whose recoveries from pesticide poisoning were expedited by information contained in the booklet.

5. Of those who received the booklet:

   a. 1.5 percent thought more information was needed on pesticide poisoning.

   b. 58.5 percent said that no additional information on pesticide poisoning was necessary.

   c. 47.9 percent had no opinion as to the need for additional information on pesticide poisoning.

6. In response to the question "In your opinion, has there been an increase in the frequency of occurrence of pesticide poisoning since 1 January 1973:"

   a. 5.8 percent said Yes
   b. 46.4 percent answered No
   c. 47.8 percent stated no opinion

The fact that approximately half of the doctors stated that they hadn't received the EPA letter or booklet is not surprising. Many doctors' mail is screened by receptionists/nurses, consequently even though it had been received they might not have been aware of its existence unless they had occasion to need it.

EI believes that one of PROJECT SAFEGUARD'S most significant accomplishments is that 20.4 percent of the medical target group found the booklet helpful in the diagnosis and treatment of pesticide poisoning. This means that approximately 4,200 doctors in the PROJECT SAFEGUARD counties are better prepared to cope with Safeguard poisoning than they were before "Safeguard."

It is logical to conclude that the same results would apply to the original EPA medical group mailing list. This would indicate that about 14,300 doctors are better able to recognize and treat pesticide poisoning because of PROJECT SAFEGUARD. EI suggests that EPA do everything in its power to disseminate the information contained in its booklet "Diagnosis and Treatment of Poisoning by Pesticides" to all registered doctors.

An equally important statistic derived from the Medical Questionnaire is that 5.8 percent of the doctors who received the booklet said that they had been personally associated with patients whose recoveries had been expedited by information contained in it. It appeared that no two doctors were referring to the same patient when they answered Question 4. Therefore, about 630 people suffering from some form of pesticide poisoning were helped in their recovery by information distributed by the project. It is logical that the 365 pesticide incidents which PASS reported for 1973 reflects a lower number of poisonings than the conclusions reached in the previous paragraph. In the first place, not all pesticide incidents are reported to the FDA whose files are PASS's primary source of data. Secondly, PASS investigators screen the poisonings reported by FDA and thenforward the selected pesticide accidents to the EPA regional offices for investigation and verification. This selection process would tend to further reduce PASS's reported number of pesticide incidents compared to the number of actual cases treated by physicians.

The answers to Question 5 indicate that the Technical information in the booklet is largely satsifactory. However, EI suggests that the doctors who thought that more information was needed should be contacted for suggested improvements. Those suggestions deemed valid should be incorporated into the already, invaluable booklet.

The response to Question 6 is also revealing. It could be expected that the spotlight focused on pesticide poisoning by publicity associated with Project Safeguard would have produced a sharp increase in the number of cases reported. However, only 5.8 percent of the doctors thought that there had been an increase in pesticide poisonings in 1973 whereas 46.4 percent thought that there had been no increase. EI interprets this as an indication that "Safeguard" succeeded in getting its message across to its target groups and thereby averted a much greater increase in pesticide poisoning. Exhibits XXXIII and XXXIV graphically depict the target groups responses to the Medical Questionnaire.

C. Poison Control Centers/Hospitals Analysis

The statistical sample of the Poison Control Centers/ Hospitals included all of the Poison Control Centers in the PROJECT SAFEGUARD states supplemented by hospitals to fill out the required sample size of 600. EI decided to concentrate on the Poison Control Centers for two reasons:

1. The nature of their operation puts them closer to the kind of data EI needed to evaluate the project.
2. It was hoped that they would yield more data related to frequency, types and severity of pesticide poisonings.

The names of the Poison Control Centers and Medical directories were supplied by the EPA Regional Offices. Table V shows the reference list of the states' Poison Control Centers and Hospitals. The names of the hospitals used to fill out the desired sample size were apportioned among the states consistent with the individual state's contribution to the total hospital population. The selection of hospital names was made from a table of random numbers. Table VI shows a recapitulation of the Poison Control Centers/Hospitals sample size by state.

The Poison Control Center/Hospital Questionnaire, Exhibit XXXV was developed to measure the impact of PROJECT SAFEGUARD on these institutions and to ascertain whether

TABLE V

POISON CONTROL CENTERS AND HOSPITALS SOURCE LIST REFERENCES

STATE	
Alabama	Alabama State Board of Health Directory of Licensed Health Facilities
Arkansas	EPA List Arkansas Hospitals
Florida	Florida Annual List of Licensed Hospitals 1972-1973
Georgia	Georgia Department of Human Resources, Licensed Hospitals in Georgia 1973
Kentucky	Facilities Licensed as Hospitals by The Kentucky State Board of Health
Louisiana	EPA List Louisiana Hospitals
Mississippi	List of Mississippi Hospitals with License Status, 1972
Missouri	List 8 Area Hospitals
New Jersey	Medical Society of New Jersey, Membership Directory 1972 - 1973
North Carolina	A complete listing of North Carolina Hospitals, 1972
Oklahoma	EPA List
South Carolina	S.C. Board of Health Licensed Institutions and Facilities
Tennessee	Licensed Hospitals in Tennessee Directory 1972
Texas	EPA List
Virginia	Virginia Hospitals Licensed By Bureau Medical and Nursing Facilities Services, 1973.

TABLE VI

POISON CONTROL CENTERS/HOSPITALS SAMPLE SIZE BY STATE

STATE	NO. POISON CONTROL CENTERS	NO. MEDICAL INSTITUTIONS	TOTAL STATE SAMPLE SIZE
Alabama	7	29	36
Arkansas	7	30	37
Florida	33	27	60
Georgia	11	29	40
Kentucky	7	30	37
Louisiana	5	28	33
Mississippi	11	29	40
Missouri	15	7	22
New Jersey	34	26	60
North Carolina	6	30	36
Oklahoma	5	27	32
South Carolina	2	30	32
Tennessee	7	30	37
Texas	23	28	51
Virginia	19	28	47
	192	408	600

EPA educational materials reached and was beneficial to this target group. In addition, it also attempted to obtain comparative data on pesticide poisonings for 1972/1973.

The Poison Control Center/Hospital Questionnaires were mailed to the selected sample with stamped, self-addressed envelopes. A second mailing was sent to the non-respondents of the first mailing. The returns were 15.8 percent and 18.3 percent respectively from each mailing. When the second mailing tapered off, a random sample of 5 percent of the non-respondents were solicited by telephone using the same questionnaire. The results of the telephone survey were pro-rated and combined with the mail solicitations to complete the Poison Control Center/Hospital Questionnaire data.

Analysis of the data collected from the questionnaire showed that among the target group of Poison Control Centers and hospitals:

1. 51.1 percent acknowledged receipt of the EPA letter informing them of PROJECT SAFE-GUARD.
2. 52.6 percent said that they received the EPA booklet entitled "Diagnosis and Treatment of Poisoning by Pesticides."
3. Of those who received the booklet 4.5 percent found it helpful in diagnosing and treating pesticide poisonings.

4. Among those who received the booklet, 2.6 percent said that it would be helpful if additional information were included in the booklet.

5. In response to Question 5 concerning an opinion as to an increase in the frequency of pesticide poisoning in 1973:

    a. 9.3 percent thought that there was an increase.

    b. 77.0 percent said that no increase occurred.

    c. 13.7 percent had no opinion.

6. Questions 6 through 9 requested specific, comparative information on pesticide poisonings in 1972/1973. They asked whether the exposure was dermal, respiratory or ingestion and if the incidents represented emergency phone calls, emergency treatment or hospital admissions. The response to these questions were so sparse as to be unusable statistically.

7. In response to Question 10 regarding an opinion as to the reasons for the change in the number of reported pesticide incidents from 1972 to 1973:

    a. 53.6 percent said increased awareness.

    b. 20.9 percent said improved reporting.

    c. 20.1 percent said more toxic pesticides.

    d. 5.4 percent listed various miscellaneous reasons.

The results of the medical institutions' data closely correlates with the previous medical group's data. Approximately half of each group indicated that they didn't receive the letter or the booklet. In the case of the institutions it is uncertain if the person who received the literature was the same person who answered the questionnaire. Under these circumstances, it is fair to assume that a greater amount of the target group received the letters and booklets than the questionnaires indicated.

A significant amount of the Poison Control Centers and hospitals found the booklet helpful in diagnosing and treating pesticide poisoning. Converting the percentage of sample to the actual population indicates that 108 medical institutions were more prepared to help pesticide accident victims because of PROJECT SAFEGUARD's efforts.

Again, EI believes that EPA should solicit suggestions from those institutions who said it would be helpful if additional information were included in the booklet.

Opinions expressed concerning the frequency of pesticide poisoning in 1973 paralelled the doctors group. Namely, a minor amount felt that there was an increase of incidents even though the data of Question 10 shows that over half the respondents sensed an increased awareness of the dangers of toxic pesticides.

In order to shed more light on the paucity of data obtained from Questions 6 through 9, EI telephoned a sample of the respondents and asked why better and more complete data on pesticide poisonings wasn't available. The survey indicated that:

1. No statistics were available
2. The form of recording incidents did not reveal usable data.

Exhibits XXXVI and XXXVII show the results of the target group's response to the Posion Control Center/ Hospital Questionnaire.

D. Applicator Analysis

The statistical sample for the applicator target group consisted of both aerial and ground applicators. Twelve states were included in the preparation of the sample. Oklahoma and Virginia did not submit an applicator mailing list and since Texas' list arrived too late it was not included in the survey. The applicator source list references are shown in Table VII by state.

As previously developed, the sample size for the applicators was 600. A breakdown by state of the sample group is shown in Table XIII. An applicator mailing list was drawn, using a table of random numbers, from the source references.

The Applicator Questionnaire, Exhibit XXXVIII, was mailed to 600 applicators. The first mailing drew a response of 33.0 percent. A second mailing was sent out two weeks after the first one and produced a response of 25.8 percent. Five percent of the non-respondents were randomly selected and solicited by telephone. The telephone solicitations were pro-rated and combined with the return-mail questionnaires to complete the applicator survey.

Analysis of the data collected from the Applicator Questionnaire showed that among this target group:

TABLE VII

APPLICATOR SOURCE LIST OF REFERENCES

STATE	
Alabama	Custom Pesticide Applicators Licensed for 1973.
Arkansas	Arkansas Agricultural Aviation Ass'n. 1972 Membership List
Florida	State of Florida Department of Health and Rehabilitation Services. List of Pest Control Firms
Georgia	EPA IBM Printout
Kentucky	Div. Regulatory Services, Pesticide Applicators List 1973
Louisiana	Agricultural Pesticide Applicators Licensed in Louisiana
Mississippi	State of Mississippi, Department of Agriculture and Commerce - List of Applicators
Missouri	EPA List
New Jersey	EPA List
North Carolina	N.C. Department of Agriculture, Pesticide Branch, Listing of Applicators
Oklahoma	No List Submitted
South Carolina	EPA IBM Printout
Tennessee	EPA IBM Printout
Texas	List submitted too late for inclusion
Virginia	No List Submitted

TABLE VIII

APPLICATOR SAMPLE SIZES BY STATE

STATE	ESTIMATED NUMBER APPLICATORS IN PROJECT SAFEGUARD AREA	% OF TOTAL	STATE SAMPLE SIZE
Alabama	99	6.4	46
Arkansas	40	2.5	22
Florida	18	0.9	12
Georgia	121	7.7	55
Kentucky	396	25.2	158
Louisiana	190	12.0	79
Mississippi	102	6.6	47
Missouri	29	1.8	19
New Jersey	7	0.4	7
North Carolina	278	17.6	113
Oklahoma	-	-	-
South Carolina	36	2.4	22
Tennessee	33	2.1	20
Texas	112	7.2	-
Virginia	-	-	-
	1,461		600

1. 99.2 percent were aware of the health hazards associated with the highly toxic pesticides.
2. 93.7 percent indicated that highly toxic pesticides should be kept separately under lock and key. Many of the applicators expressed the opinion all pesticides should be kept under lock and key.
3. 97.5 percent said that pesticide storage areas should be posted with warning notices.
4. 99.5 percent of the Applicators said that labels should be checked before using highly toxic pesticides. Discussions with applicators indicated that this was necessary if the pesticides were to be properly used.
5. 93.8 percent said that it was good practice to thoroughly wash out mixing equipment between mixings.
6. 92.4 percent felt that pesticides should be stored only in their original containers.
7. 92.9 percent thought that clothing used in pesticide work should be washed separately from other clothes.
8. 96.8 percent reported familiarity with the symptoms of pesticide poisoning.
9. 99.7 percent said that medical treatment should be sought immediately if you become ill after using pesticides.
10. 99.6 percent knew that wind drift conditions are important considerations in the application procedures of pesticides.
11. The sources of knowledge of dangers associated with pesticides were:

	SOURCE	PERCENT
a.	Newspapers	41.8
b.	Radio	10.9
c.	Television	11.8
d.	Magazines	41.0
e.	Dealer	59.2
f.	Formulator Instruction	77.5
g.	Organization Meetings	55.7
h.	County Extension Agency	70.1

Each applicator indicated more than one source, so that, the totals do not add up to 100 percent.

12. The responses to protective clothing which should be worn while mixing highly toxic pesticides were:

	ITEM	PERCENT RESPONSE
a.	Wide Brim Hat	39.4%
b.	Waterproof Boots	66.4%
c.	Respirator	85.5%
d.	Safety Goggles	82.2%
e.	Plastic or Rubber Apron	63.7%
f.	Full Skin Coverage Clothes	67.2%
g.	Rubber Gloves	90.5%

13. They thought that equipment used for mixing pesticides should be cleaned:

a.	After each use	52.4%
b.	Daily	43.5%
c.	Weekly or Other	4.1%

The response to this question indicated a conflict with the answers to Question 5. Discussions with the applicators showed that they didn't clean between each mixing if they applied the same chemical more than once in the same day.

14. 93.7 percent thought that protective clothing should be washed alone.

15. 98.2 percent replied that rinsing, crushing and burying empty pesticide containers is a good way to dispose of them. The applicators said that it was best to dispose of them in a landfill area whenever possible.

The results of the applicator survey indicates that their most consistent source of pesticide information was the county agent and the formulator. Exhibits XXXIX, XL, XLI and XLII graphically show the response to the Applicator Questionnaire.

E. Dealer/Formulator Analysis

The statistical sample for the Dealer/Formulator target group was randomly drawn from the source list references supplied by the EPA State Offices, Table IX. The total target group population was 10,566. All PROJECT SAFE-GUARD states were represented in the sample size of 603, Table X.

The Dealer/Formulator Questionnaire, Exhibit XLIII, was mailed to 603 potential respondents. Two mailings were sent out two weeks apart with stamped self-addressed envelopes and a cover letter explaining the purpose of the questionnaire. The response from the mailings were 23.5 percent and 24.7 percent respectively for a total mail return of 48.2 percent. A 5 percent sample of the non-respondents was randomly chosen and queried by telephone using the Dealer/Formulator Questionnaire. The results of the telephone survey were proportionally combined with the mail returns to yield a final Dealer/Formulator response.

Analysis of the Dealer/Formulator data showed that in this target group:

1. The media which helped them become aware of the dangers of the highly toxic pesticides were:

TABLE IX

DEALER/FORMULATOR SOURCE LIST REFERENCES

STATE	
Alabama	Department of Agriculture, Pesticide Dealer License
Arkansas	Arkansas State Plant Board 2,4-D Dealer Permits 1972
Florida	State of Florida, Department Of Health and Rehabilitation Services. List of Pest Control Firms
Georgia	EPA - IBM - Printout
Kentucky	EPA List
Louisiana	None
Mississippi	State of Mississippi Department of Agriculture and Commerce Listing of Dealers
Missouri	EPA List
New Jersey	EPA List
North Carolina	North Carolina Department of Agriculture, Pesticide Branch
Oklahoma	None
South Carolina	S.C. Crop Pest Commission List
Tennessee	Agriculture Extension Service List, University of Tennessee
Texas	EPA List
Virginia	EPA List - Pesticide Registration Dealer List 1973

TABLE X

DEALER/FORMULATOR SAMPLE SIZE BY STATE

STATE	NO. DEALERS & FORMULATORS	%	SAMPLE SIZE
Alabama	590	5.6	34
Arkansas	423	4.0	24
Florida	150	1.4	9
Georgia	1,210	11.5	69
Kentucky	329	3.2	19
Louisiana	260	2.5	15
Mississippi	1,077	10.2	61
Missouri	1,102	10.4	62
New Jersey	300	2.8	17
North Carolina	2,023	19.1	115
Oklahoma	269	2.5	15
South Carolina	703	6.7	40
Tennessee	804	7.6	47
Texas	909	8.6	52
Virginia	412	3.9	24
	10,566	100	603

a.	Newspaper	37.4%
b.	Radio	22.1%
c.	Television	35.5%
d.	Journals	36.3%
e.	EPA Letter	28.6%
f.	Formulator Literature	57.1%
g.	Personal Contact	48.6%
h.	Other	9.4%

The total exceeds 100 percent because many respondents chose more than one media in Question 1.

2. 91.4 percent instructed purchasers of toxic pesticides to read and follow directions and warnings on the package label.

3. 87.5 percent distributed pesticide warning and precautionary literature to customers.

4. 88.8 percent prominently displayed and made easily available to customers pesticide warning and precautionary literature.

5. 91.4 percent stressed the need for protective equipment to purchasers of toxic pesticides.

6. 44.4 percent stocked protective equipment for sale to customers.

7. 64.6 percent attended meetings or received instructions regarding safety procedures for handling toxic pesticides.

The results of the Dealer/Formulator Questionnaire showed a high level of participation in the dissemination of PROJECT SAFEGUARD information. The responses to Question 1 indicates that PROJECT SAFEGUARD contributed to the group's awareness.

In future programs more emphasis should be placed on the stocking of protective equipment by pesticide dealers.

Exhibits XLIV and XLV graphically show the results of the Dealer/Formulator Questionnaire.

F. Organizational Analysis

An overview of the PROJECT SAFEGUARD Organization was obtained by interviewing various program staff personnel at the Federal, State and County levels. EI believes that its sample plan for field investigation assured that its program staff personnel interviews were randomly accomplished.

The responsibility for planning and implementing PROJECT SAFEGUARD activities was shared between a state and National Committee or Board of Directors. This decentralization of authority and responsibility was a key factor in attaining Safeguard's goals. It provided channels for rapid communication between field and staff efforts. The local personnel were able to insert inputs early in the program which gave invaluable insights about the nature of the target groups in each area. It also secured cooperation, on a partnership basis, between diverse agencies at county, state and national levels. The most expressed comment from PROJECT SAFEGUARD personnel was the satisfaction of working together towards a common goal.

The State Committee or Boards of Directors consisted of one representative each from:

- EPA
- State Extension Service

- State Department of Agriculture
- Jaycee
- Industry

The states' Boards of Health participated to secure the cooperation of the medical community. The Jaycee representative was appointed by his state's President of the Jaycees. His duties were mainly concerned with promoting and disseminating information within the Jaycee organization. The industrial representative was selected by EPA from names recommended by the National Agricultural Chemical Association. He helped to secure technical assistance from the chemical industry and made suggestions for publicity materials and their production. It is a good example of cooperation between industry and government in the public's interest.

Region IV had one additional member on each of its states' Committees or Board of Directors. He was called the "$6,500.00 representative" because of EPA's contribution to his department. His main function was to act as his state's liaison representative between the State Agricultural Department and EPA. He contacted dealers, distributors and formulators of pesticides to enlist their assistance in and to commit their field personnel to the PROJECT SAFEGUARD program. In addition, he disbursed information to pesticide retail outlets and contacted the medical community and vocational/

agricultural teachers to inform them about PROJECT SAFEGUARD.

An example of how PROJECT SAFEGUARD tailored its methods to suit local needs is best exemplified by Texas' state program. Texas has a large number of migrant farm laborers. Many of these workers are more fluent in Spanish than in English. As a result, PROJECT SAFEGUARD posters, literature and movies were converted to the Spanish language to meet this condition. In addition, bilingual EPA representatives carried the Safeguard message into schools and migrant laborer camps.

SECTION IV

CONCLUSIONS AND RECOMMENDATIONS

EI believes that PROJECT SAFEGUARD accomplished its primary goals. The farmer, dealer, formulator, applicator and medical personnel target groups are profoundly aware of the potential hazards associated with the use of the highly toxic DDT replacements. Also, the users of toxic pesticides are very knowledgeable of the techniques for safely handling, mixing, applying and disposing of these chemicals. Conclusions with respect to a specific target group and its level of knowledgeability are contained in Section III of the report under that group's analysis.

Recommendations which would help future programs similar to Safeguard and which would benefit the public are:

1. There is need for an expanded program of education in the proper techniques for using the toxic pesticides and the hazards associated with their use. The program should include all farmers in the United States and children in the 1 - 12 age group. EI's analysis of the PASS reports showed that children in this age group are very susceptible to pesticide accidents. In a report published by E. Edsel Moore and James E. Peters of the Kentucky State Department of Health it was shown that 58 percent of all reported incidents of pesticide poisoning fell into the 1 - 12 age bracket.

2. More stringent control is needed over the disposal of used pesticide containers. Optimum benefits might be obtained if EPA inspectors concentrated their efforts on this aspect of the problem.

3. Set standards for the certification of commercial and private users of restricted pesticides under the Federal Environmental Pesticide Control Act. This would give the law the necessary yardsticks for its enforcement.

4. Farmers should be included under applicable Pesticide Applicator Laws.

5. States should be encouraged and guided to adopt toxic pesticide purchase and use permit laws similar to those in Alabama and Florida. One of the requirements for issuance of a permit should be proof of having received instructions in the proper use of the toxic chemicals. The local staff Extension Service would be a logical agency for conducting the necessary training.

6. An improved system for reporting and investigating pesticide incidents should be developed.

EXHIBIT I

PROJECT SAFEGUARD STATES

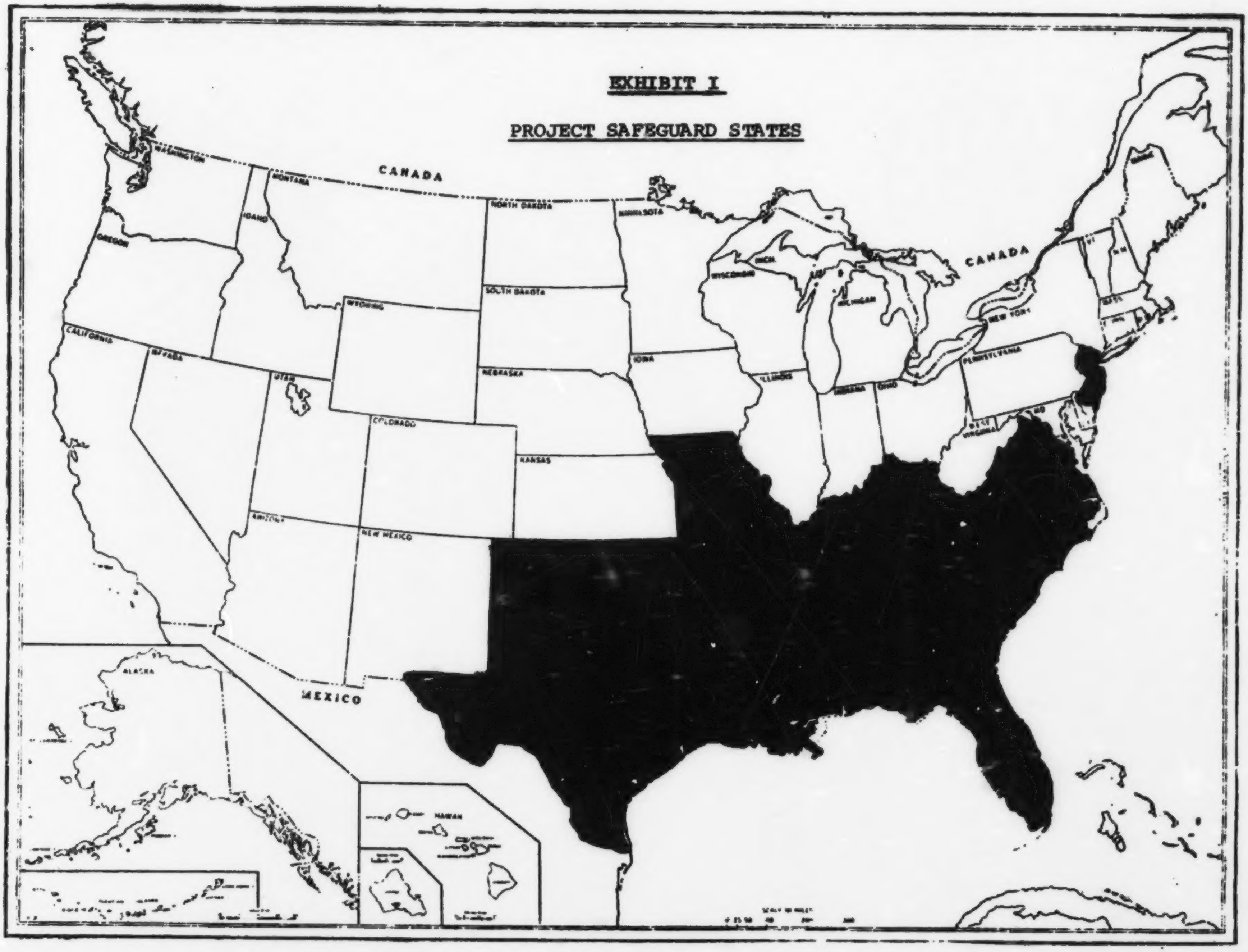
CANADA
WASHINGTON
OREGON
IDAHO
MONTANA
CALIFORNIA
NEVADA
UTAH
ARIZONA
WYOMING
COLORADO
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
MINNESOTA
IOWA
WISCONSIN
MICH
MICHIGAN
ILLINOIS
INDIANA
OHIO
CANADA
NEW YORK
PENNSYLVANIA
WEST VIRGINIA
MD
VT
NH
MASS
MAINE
MEXICO
ALASKA
HAWAII

EXHIBIT II

FARMER QUESTIONNAIRE

Form Approved
OMB No. 158-S73008

1.	Do you know that the highly toxic pesticides are more dangerous to you than DDT?	Yes ☐	No ☐
2.	How did you find out about this danger?		
3.	In what year did you learn about this danger?		
4.	Is it good practice to store pesticides in containers other than the ones in which they were purchased?	Yes ☐	No ☐
5.	Can you safely reuse the pesticide containers when they are empty?	Yes ☐	No ☐
6.	Rinsing, crushing and burying empty pesticide containers is a good way to dispose of them.	Yes ☐	No ☐
7.	Should pesticides be stored in buildings or rooms with food and livestock feed?	Yes ☐	No ☐
8.	Should pesticide storage areas be locked or secured?	Yes ☐	No ☐
9.	Should soap and water be readily available when workers are mixing and working with toxic pesticides?	Yes ☐	No ☐
10.	Is it safe to dump excess mixtures of pesticides on the ground?	Yes ☐	No ☐
11.	Can pesticides enter the body through the mouth?	Yes ☐	No ☐
12.	Can pesticides enter the body through the skin?	Yes ☐	No ☐
13.	Can pesticides enter the body through the lungs?	Yes ☐	No ☐
14.	Should special protective clothing and safety equipment be worn while mixing and applying pesticide poisons?	Yes ☐	No ☐

15.	Should you wear the following pieces of protective clothing and safety equipment when working with highly toxic pesticides?	Yes	No
	A. Long Sleeve Shirt?	☐	☐
	B. Wide Brim Hat?	☐	☐
	C. Rubber Gloves?	☐	☐
	D. Waterproof Boots?	☐	☐
16.	Is it a good practive to smoke when mixing or using highly toxic pesticides?	Yes ☐	No ☐
17.	Is it important to change your clothes every day when you are mixing and applying pesticides?	Yes ☐	No ☐
18.	Should clothes worn while mixing and applying pesticides be washed with the rest of the family laundry?	Yes ☐	No ☐
19.	Is it important that someone know where you are and what your time schedule is if you have to mix and apply highly toxic pesticides by yourself?	Yes ☐	No ☐
20.	Is it safe to apply pesticides on very windy days?	Yes ☐	No ☐
21.	Is it important that you see a doctor immediately if you become sick after handling and applying highly toxic pesticides?	Yes ☐	No ☐

ALL INFORMATION SUPPLIED ON THIS QUESTIONNAIRE
-WILL BE KEPT CONFIDENTIAL AND WILL BE USED ONLY
TO EVALUATE PROJECT SAFEGUARD

EXHIBIT III

TOTAL RESPONSE TO FARMER QUESTIONNAIRE

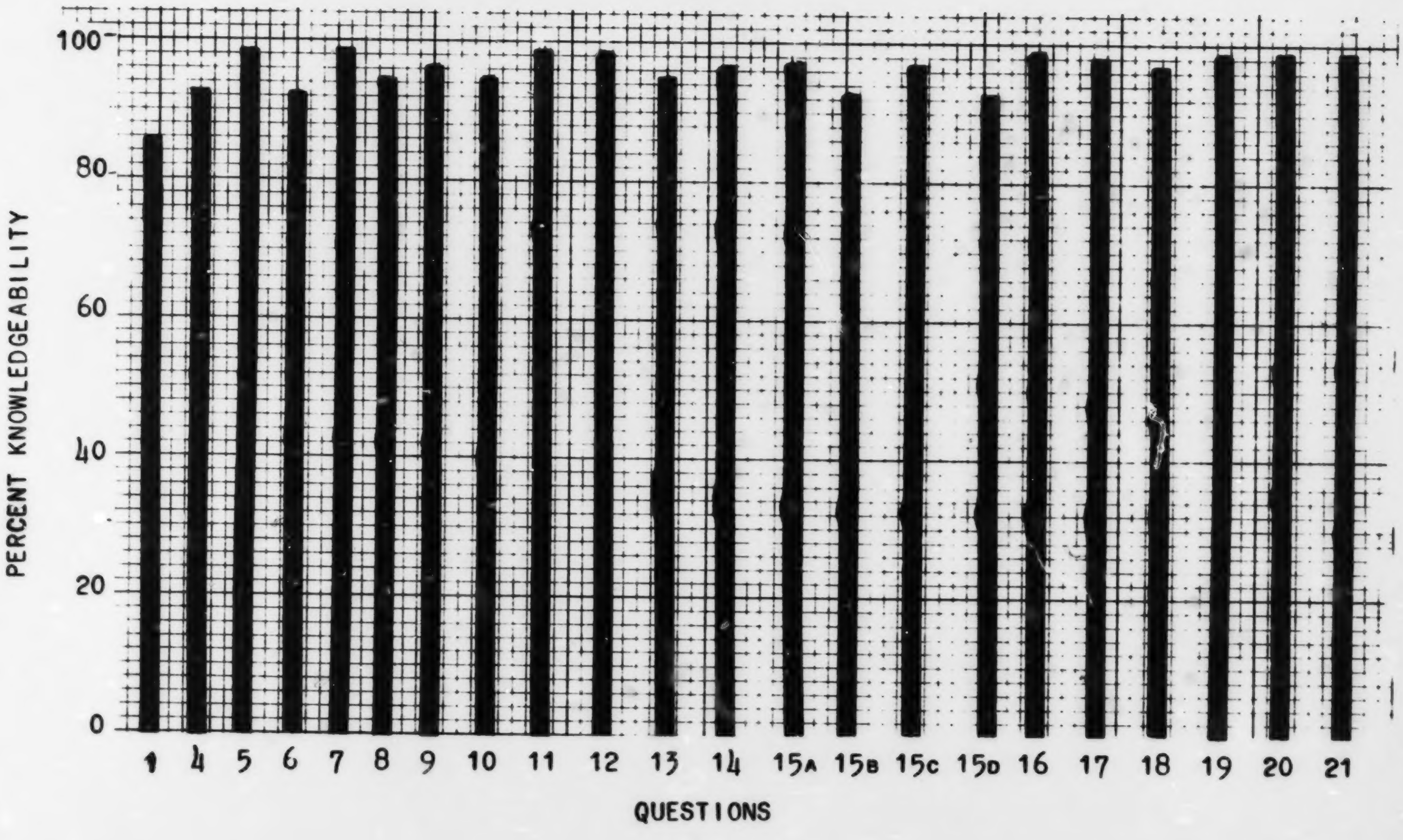

EXHIBIT IV

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 1. DO YOU KNOW THAT THE HIGHLY TOXIC PESTICIDES ARE MORE DANGEROUS TO YOU THAN DDT?

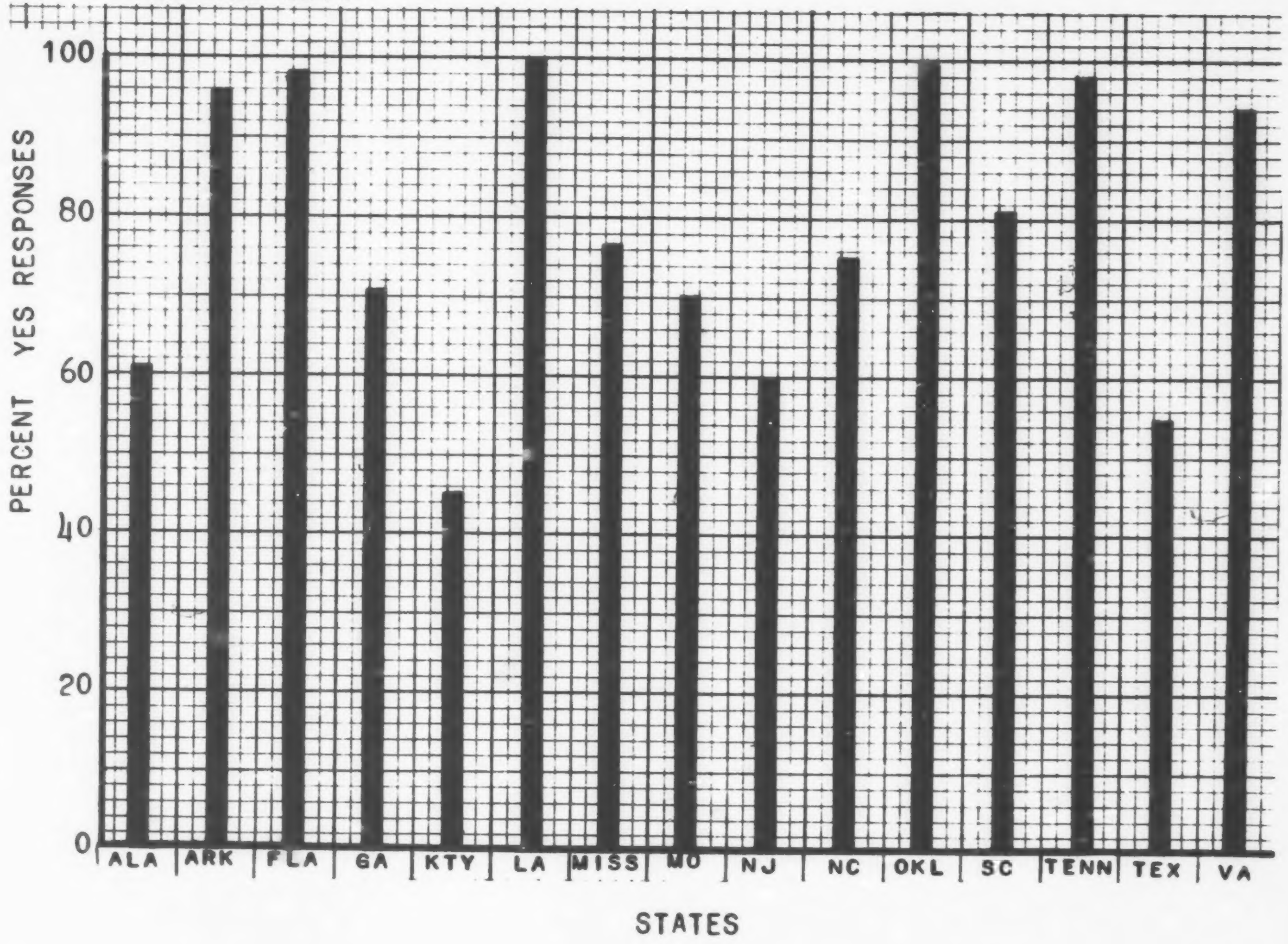

EXHIBIT V

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 2. HOW DID YOU FIND OUT ABOUT THIS DANGER ?

SOURCE A : SAFETY AIDES AND COUNTY AGENTS

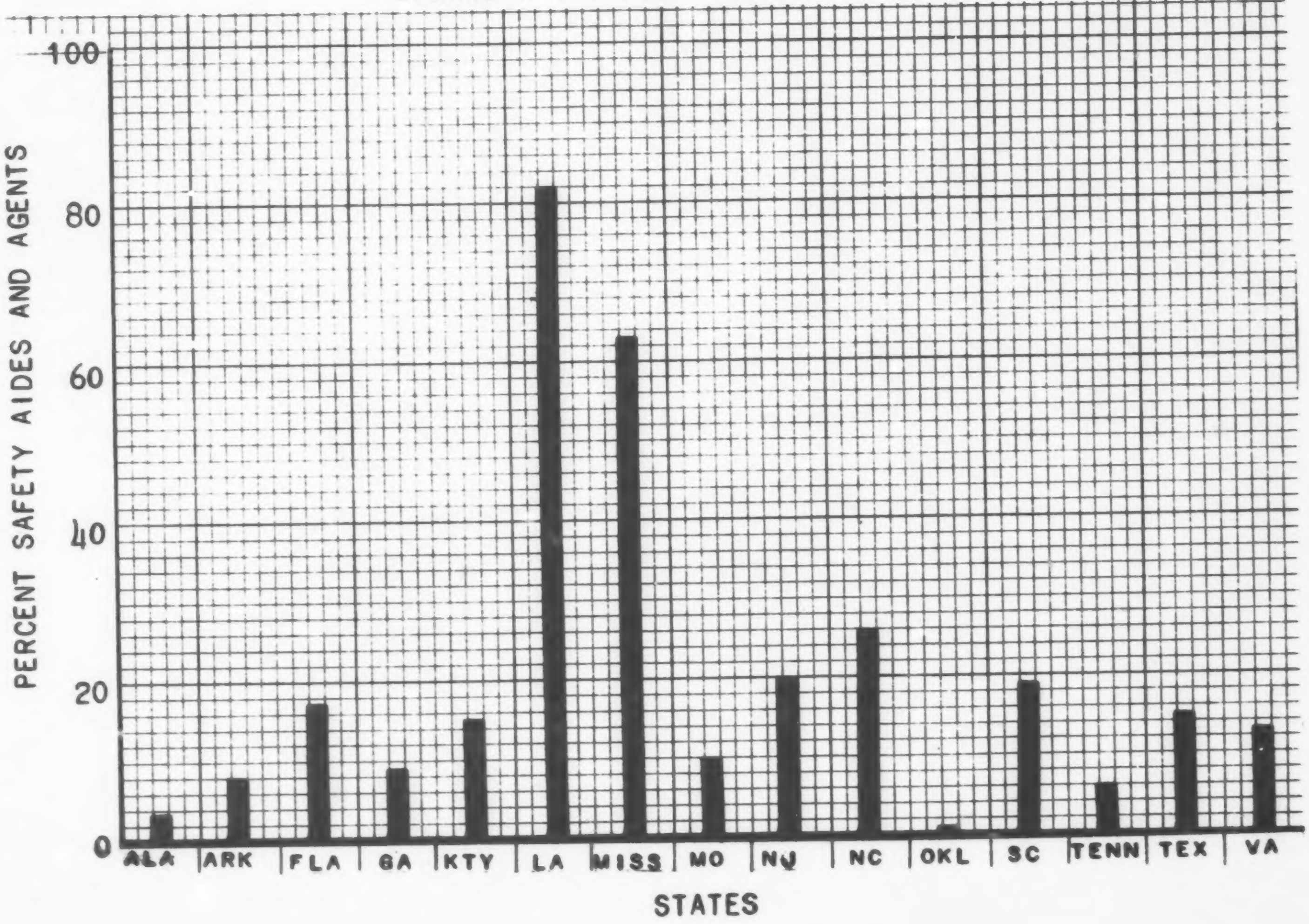

EXHIBIT VI

STATES' RESPONSES TO FARMER QUESTIONNAIRE

QUESTION 2. HOW DID YOU FIND OUT ABOUT THIS DANGER ?

SOURCE B : MASS MEDIA

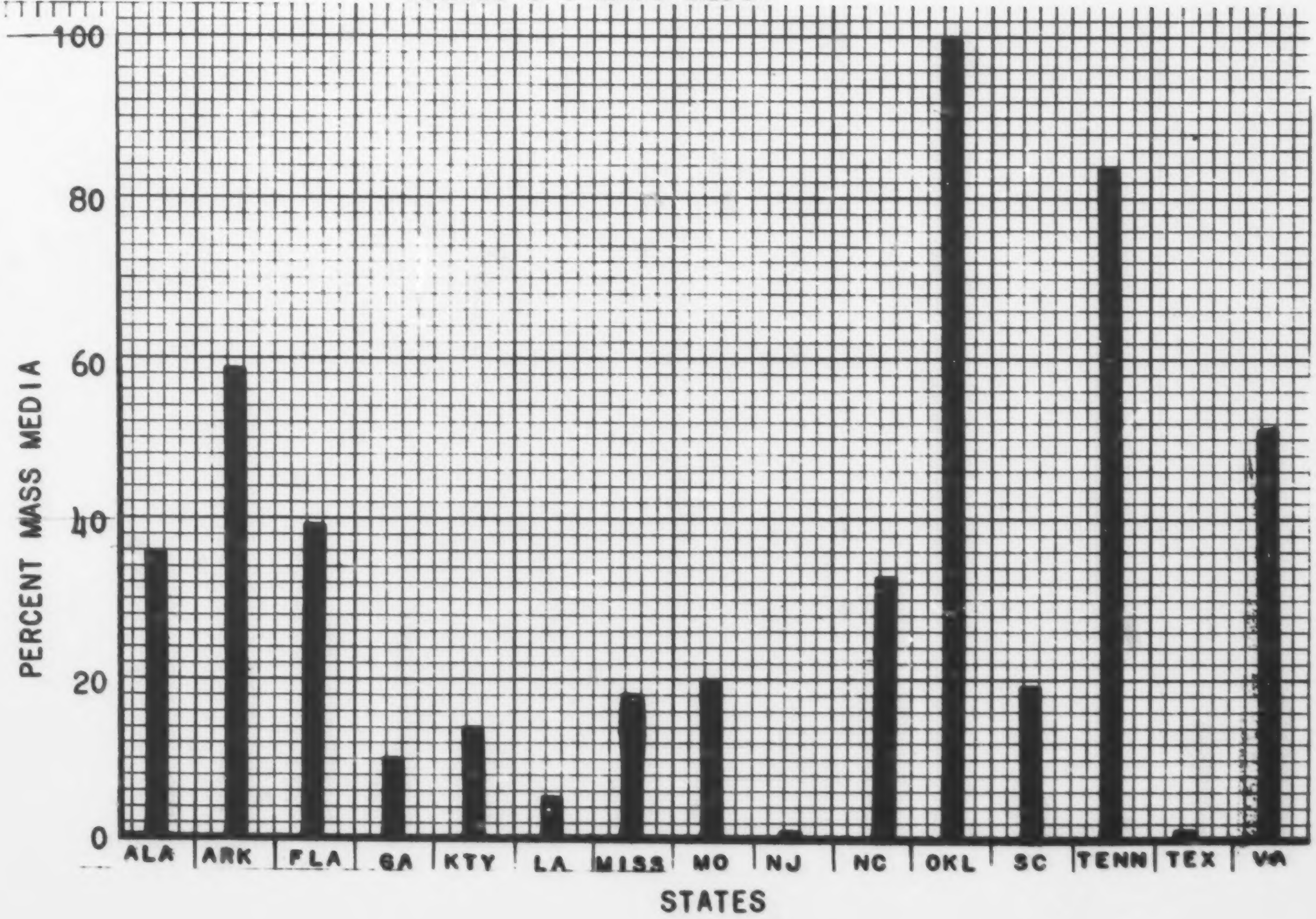

EXHIBIT VII

STATES' RESPONSE TO
FARMER QUESTIONNAIRE

QUESTION 2. HOW DID YOU FIND OUT ABOUT THIS DANGER ?

SOURCE C : EXPERIENCE

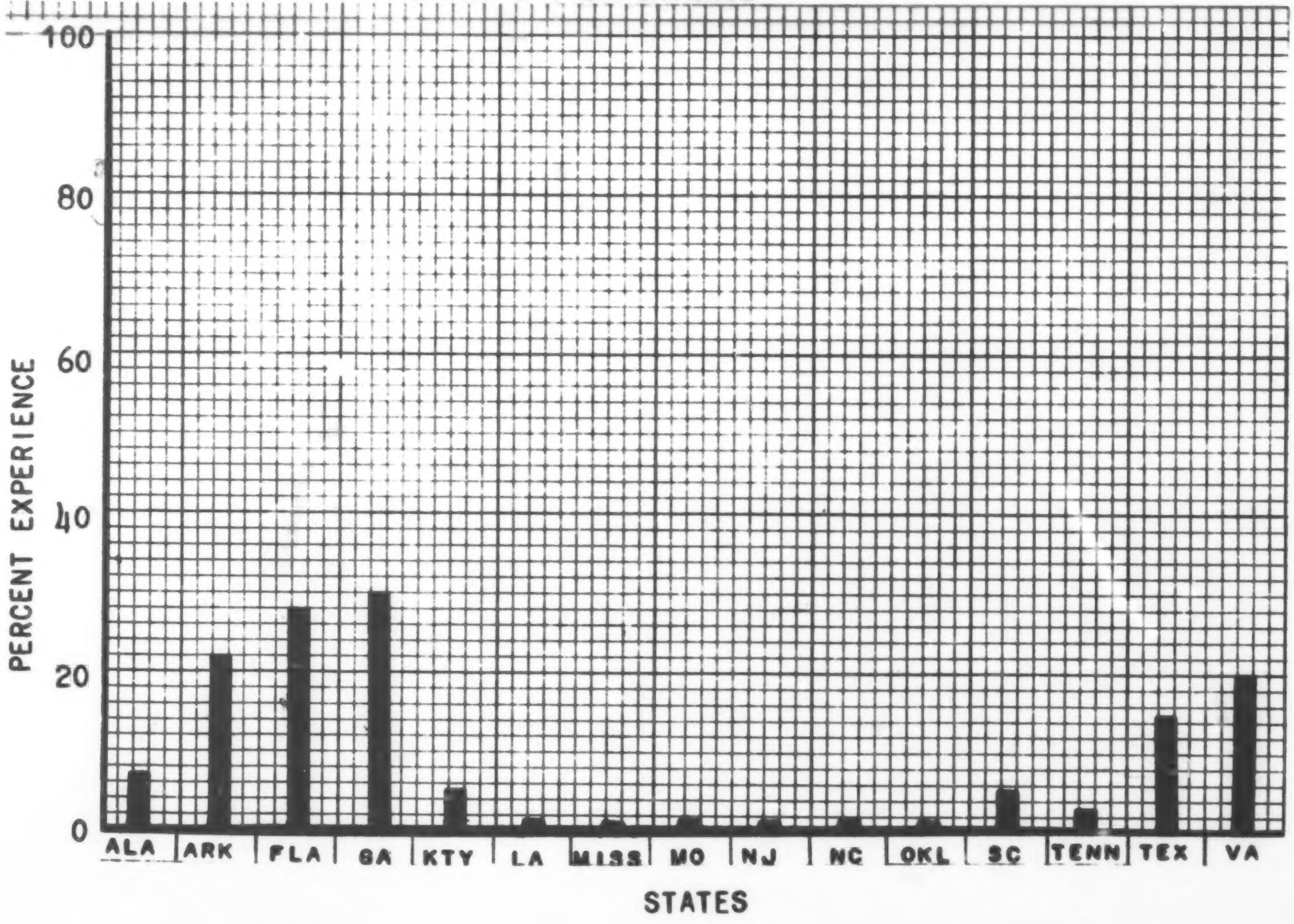

EXHIBIT VIII

STATES' RESPONSE TO

FARMER QUESTIONNAIRE

QUESTION 2. HOW DID YOU FIND OUT ABOUT THIS DANGER ?

SOURCE D : FROM LABELS

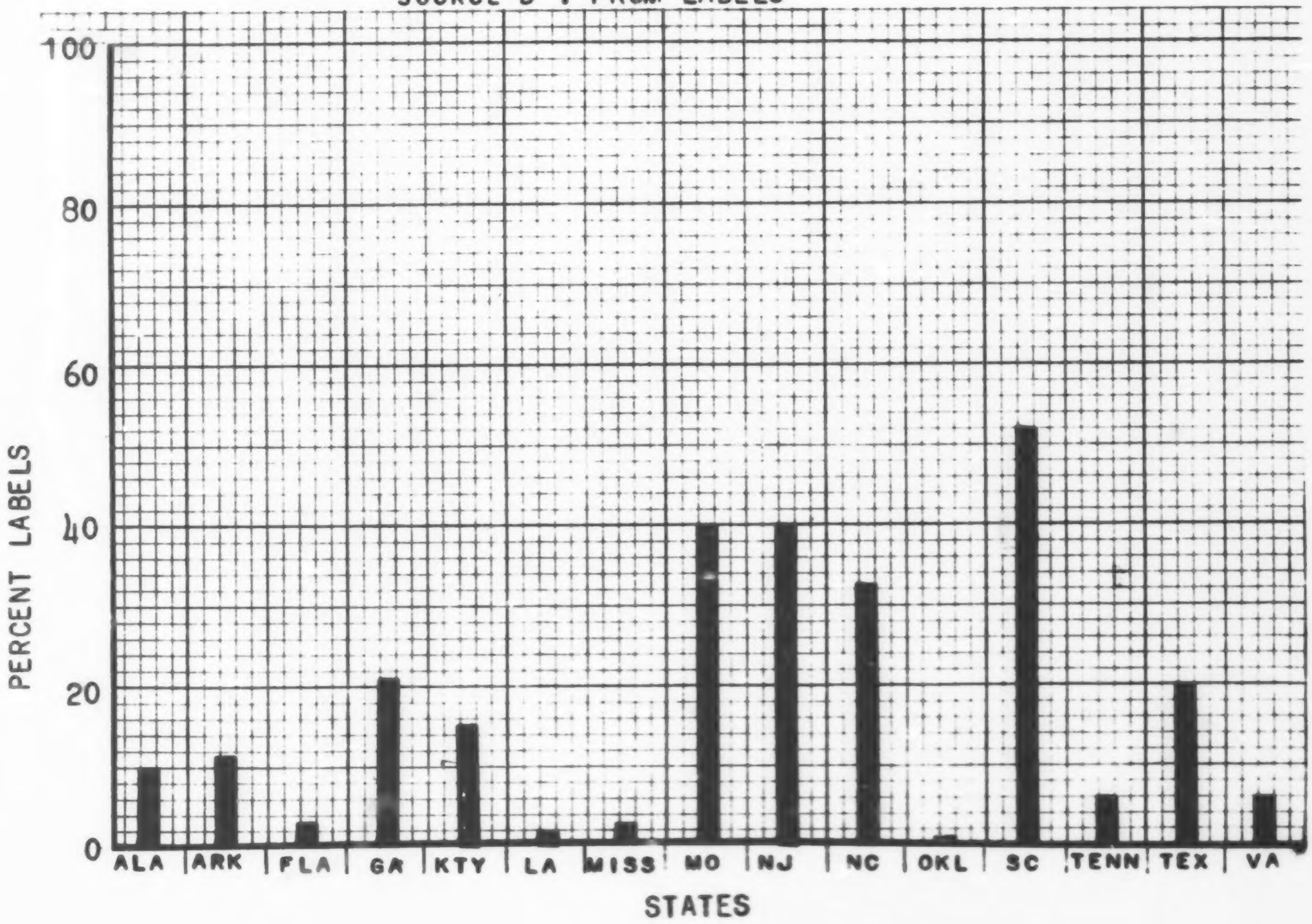

EXHIBIT IX

STATES' RESPONSE TO

FARMER QUESTIONNAIRE

QUESTION 2. HOW DID YOU FIND OUT ABOUT THIS DANGER ?

SOURCE E: DON'T KNOW SOURCE

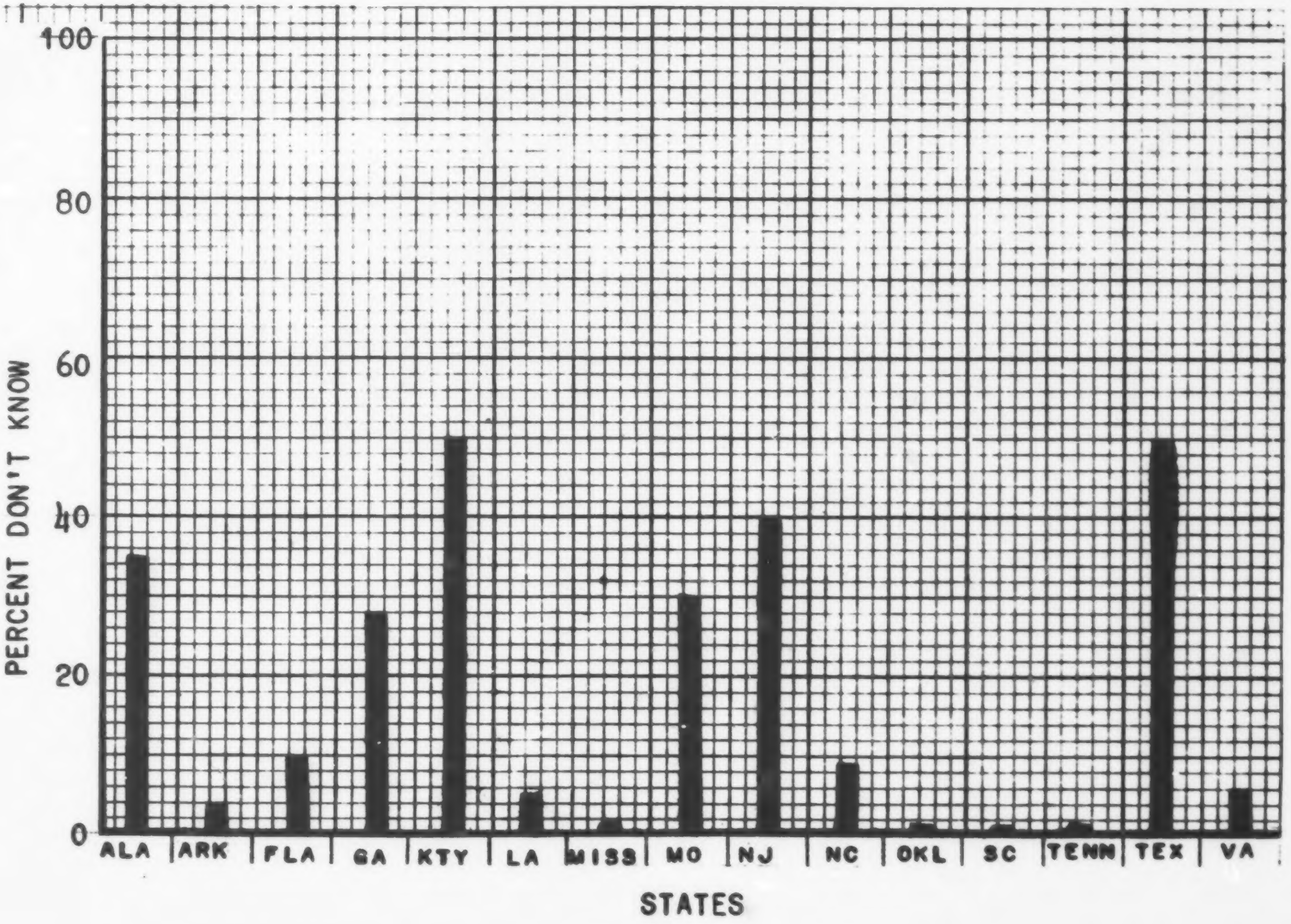

EXHIBIT X

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 3. IN WHAT YEAR DID YOU LEARN OF THIS DANGER ?

STATE	PERCENTAGE OF FARMERS IN YEAR LEARNED '73	'72	'71	'70	BEFORE '70	DON'T KNOW YEAR	NO. OF AIDES	FARMER TO AIDE RATIO
ALABAMA	18%	9%	4%	3%	16%	47%	35	709 F/A
ARKANSAS	51	40	0	0	4	44	14	631 F/A
FLORIDA	0	7	21	3	21	46	0	
GEORGIA	2	4	21	27	19	27	27	622 F/A
KENTUCKY	10	15	5	25	0	45	0	
LOUISIANA	0	47	0	31	5	16	20	300 F/A
MISSISSIPPI	96	0	0	0	0	4	115	221 F/A
MISSOURI	30	0	0	10	30	30	7	478 F/A
NEW JERSEY	20	20	0	0	20	40	7	214 F/A
NORTH CAROLINA	39	12	14	18	9	8	65	685 F/A
OKLAHOMA	0	0	0	25	68	6	0	
SOUTH CAROLINA	28	0	10	14	47	0	9	685 F/A
TENNESSEE	38	14	14	4	24	3	15	1156 F/A
TEXAS	10	5	0	0	0	85	16	403 F/A
VIRGINIA	0	20	13	6	53	6	13	367 F/A

EXHIBIT XI

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 4. IS IT GOOD PRACTICE TO STORE PESTICIDES IN CONTAINERS OTHER THAN THE ONES IN WHICH THEY WERE PURCHASED ?

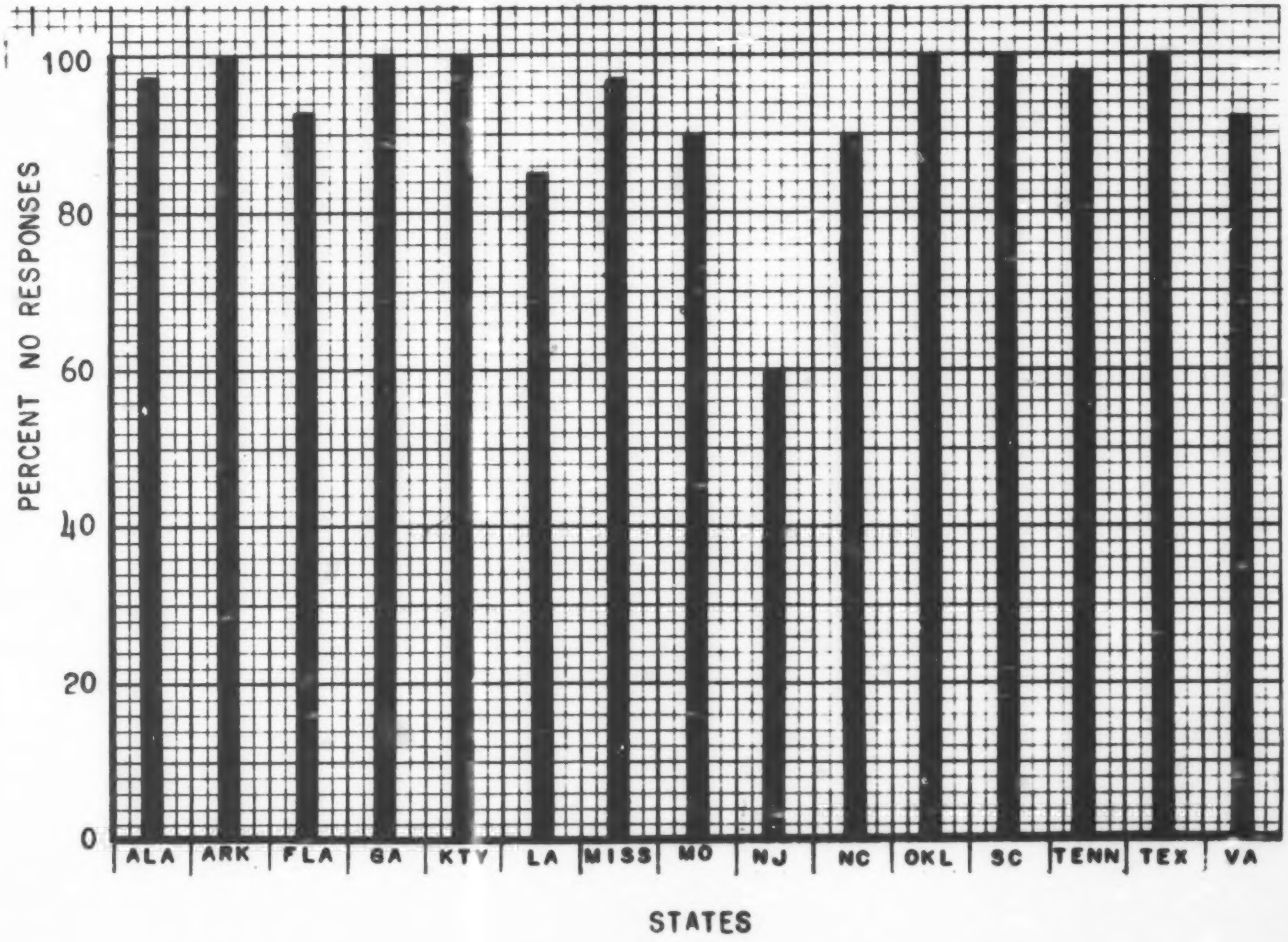

EXHIBIT XII

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 5. CAN YOU SAFELY REUSE THE PESTICIDE CONTAINERS WHEN THEY ARE EMPTY ?

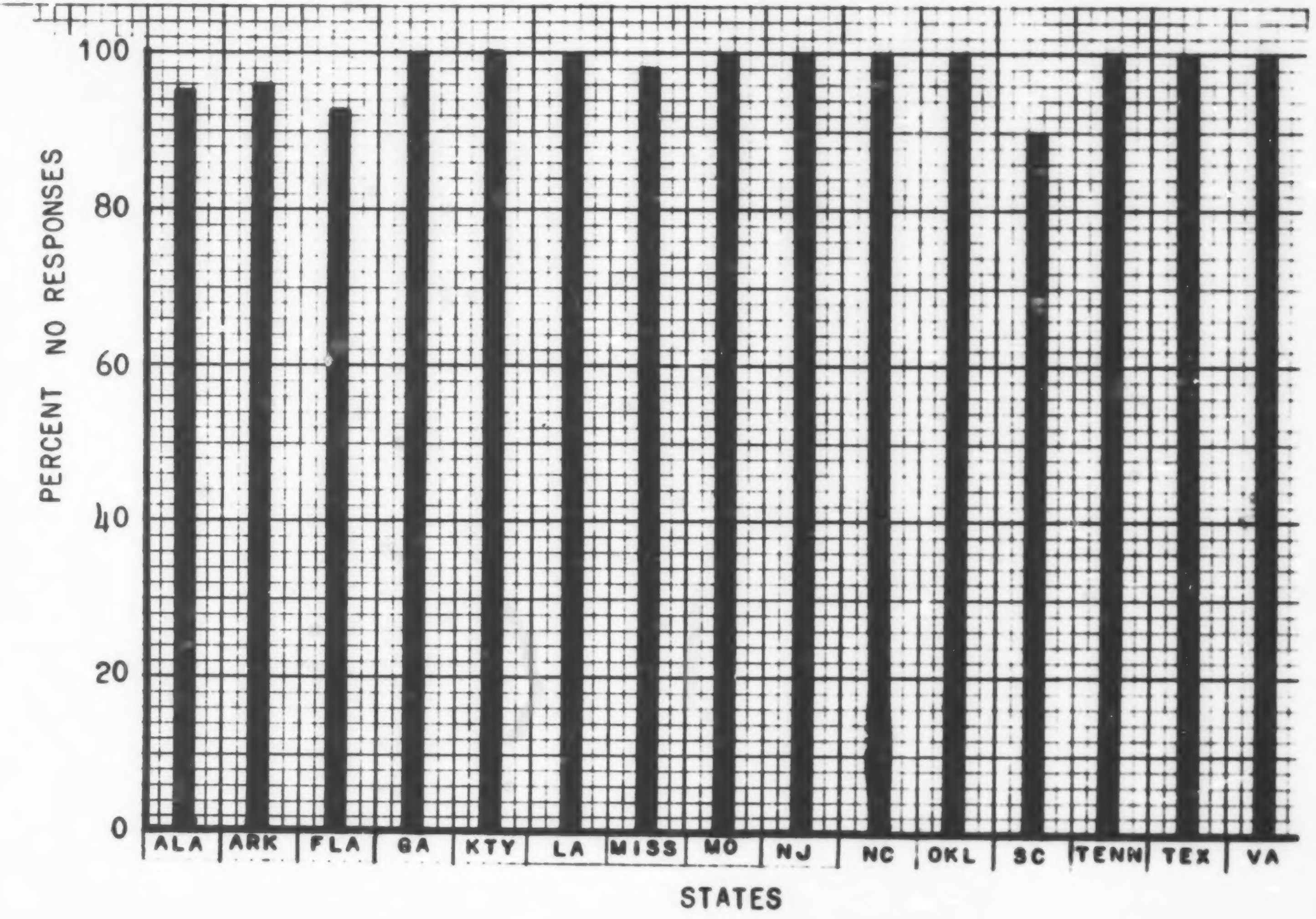

EXHIBIT XIII

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 6. RINSING, CRUSHING AND BURYING EMPTY PESTICIDE CONTAINERS ARE A GOOD WAY TO DISPOSE OF THEM.

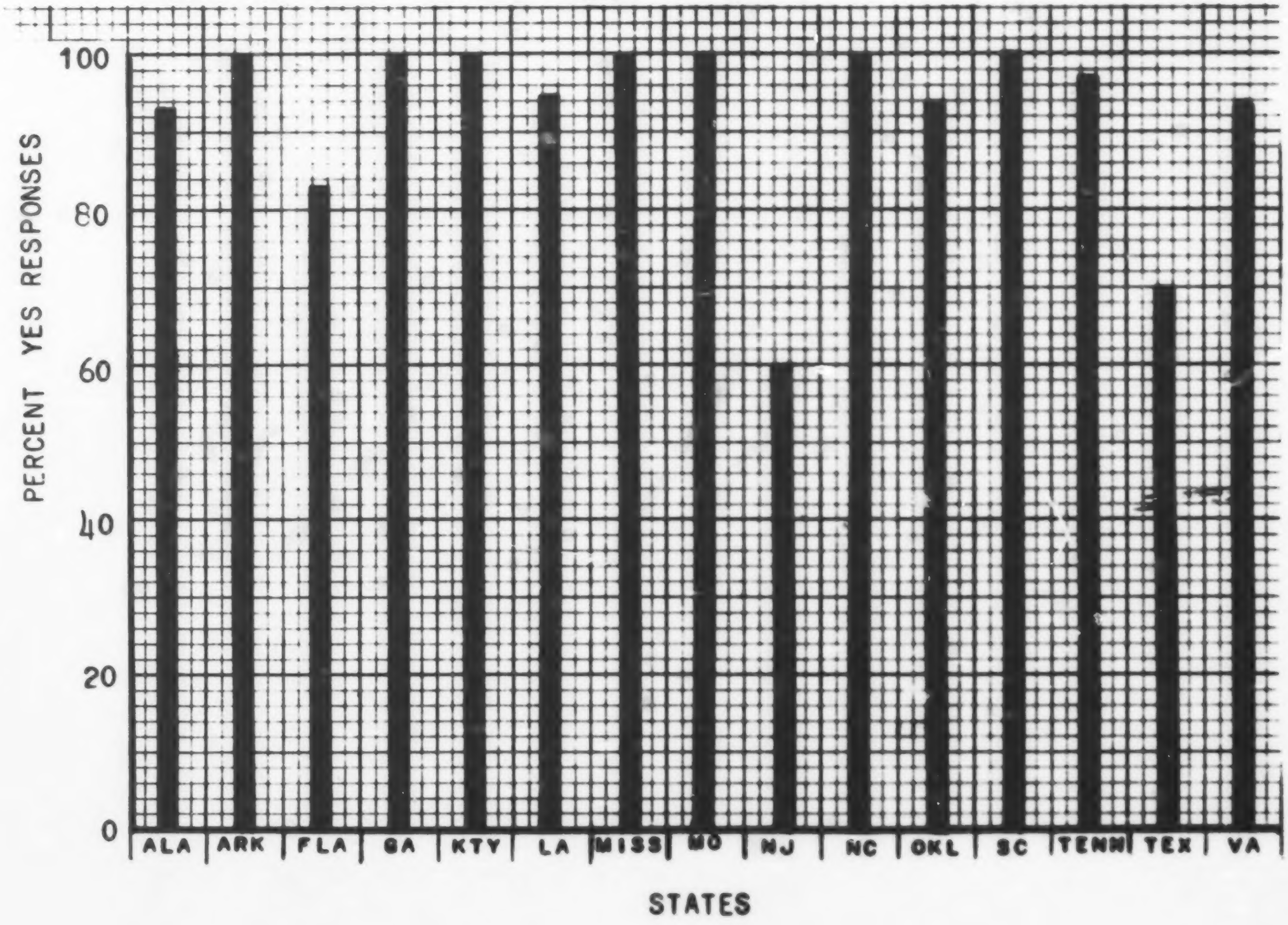

EXHIBIT XIV

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 7. SHOULD PESTICIDES BE STORED IN BUILDINGS OR ROOMS WITH FOOD AND LIVESTOCK FEED ?

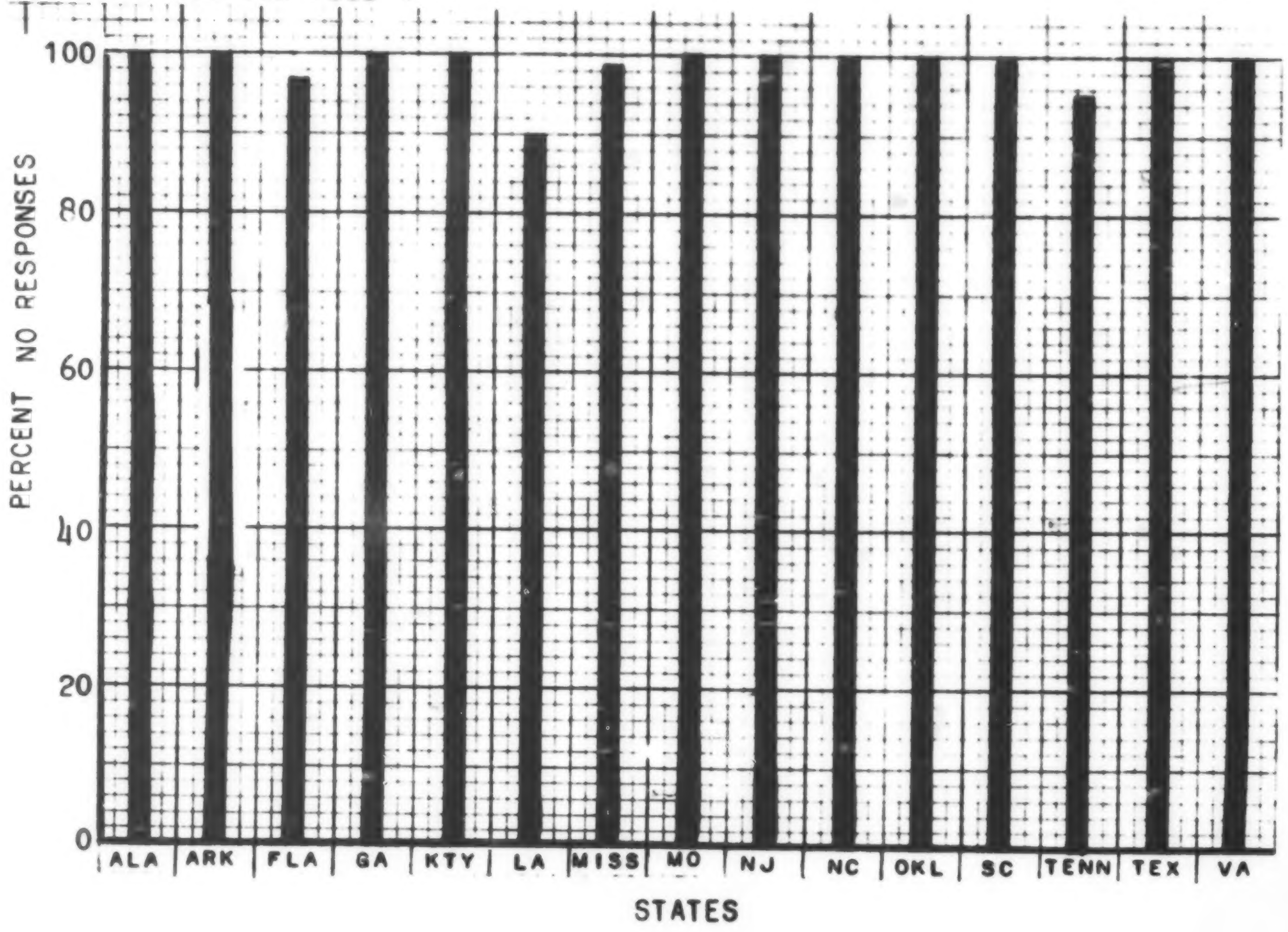

EXHIBIT XV

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 8. SHOULD PESTICIDE STORAGE AREAS BE LOCKED OR SECURED ?

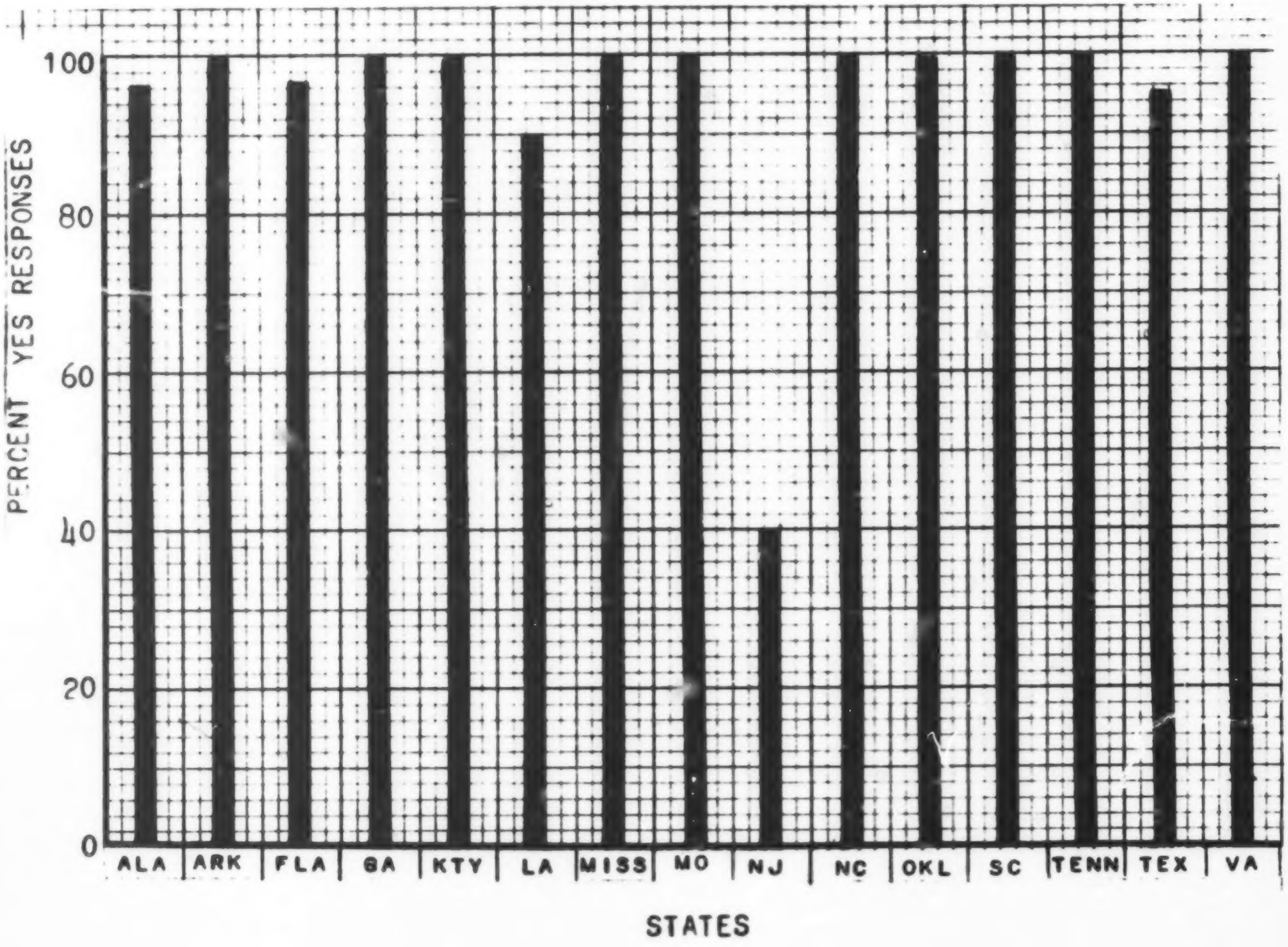

EXHIBIT XVI

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 9. SHOULD SOAP AND WATER BE READILY AVAILABLE WHEN WORKERS ARE MIXING AND WORKING WITH TOXIC PESTICIDES ?

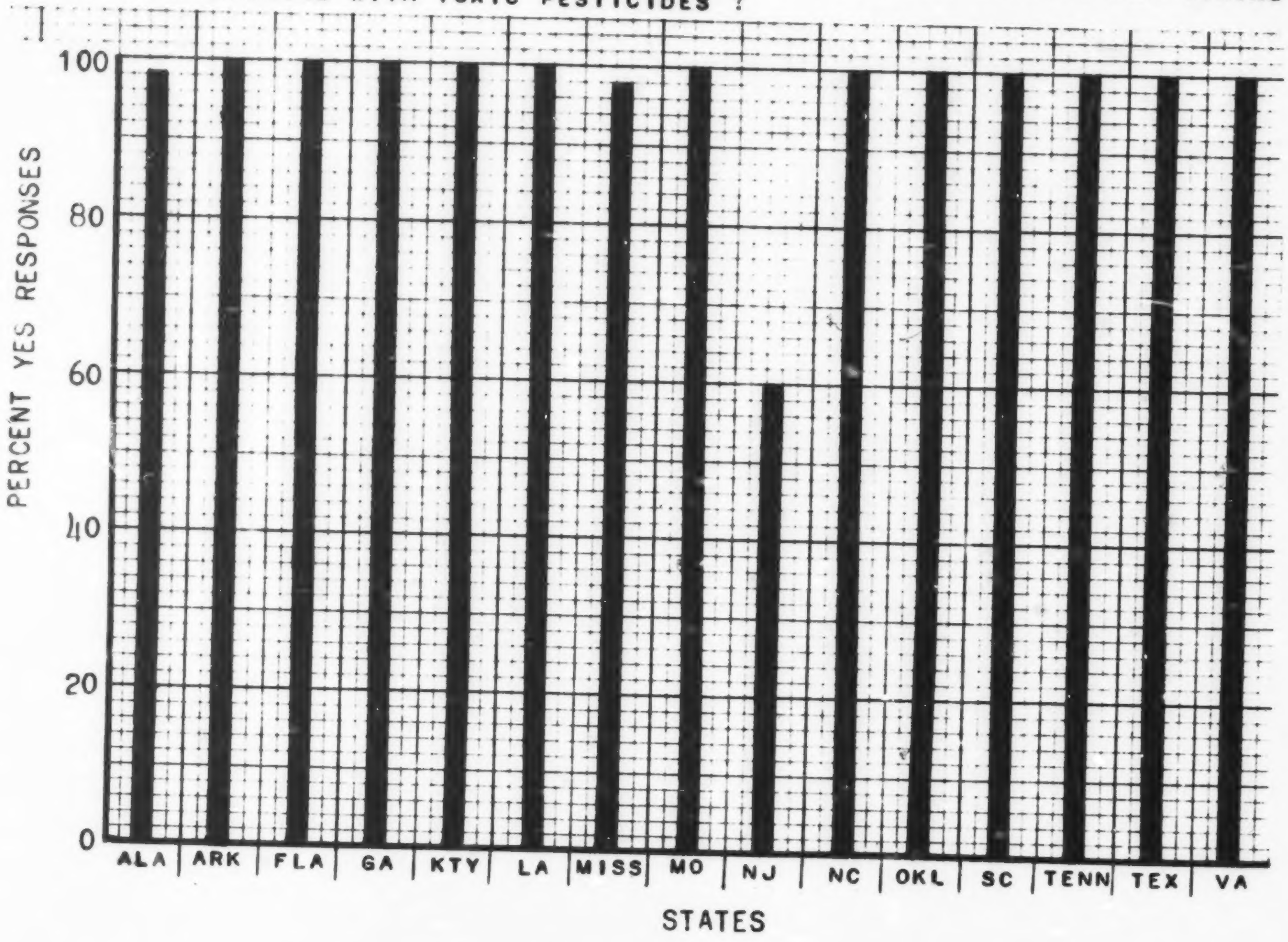

EXHIBIT XVII

STATES' RESPONSES TO FARMER QUESTIONNAIRE

QUESTION 10. IS IT SAFE TO DUMP EXCESS MIXTURES OF PESTICIDES ON THE GROUND ?

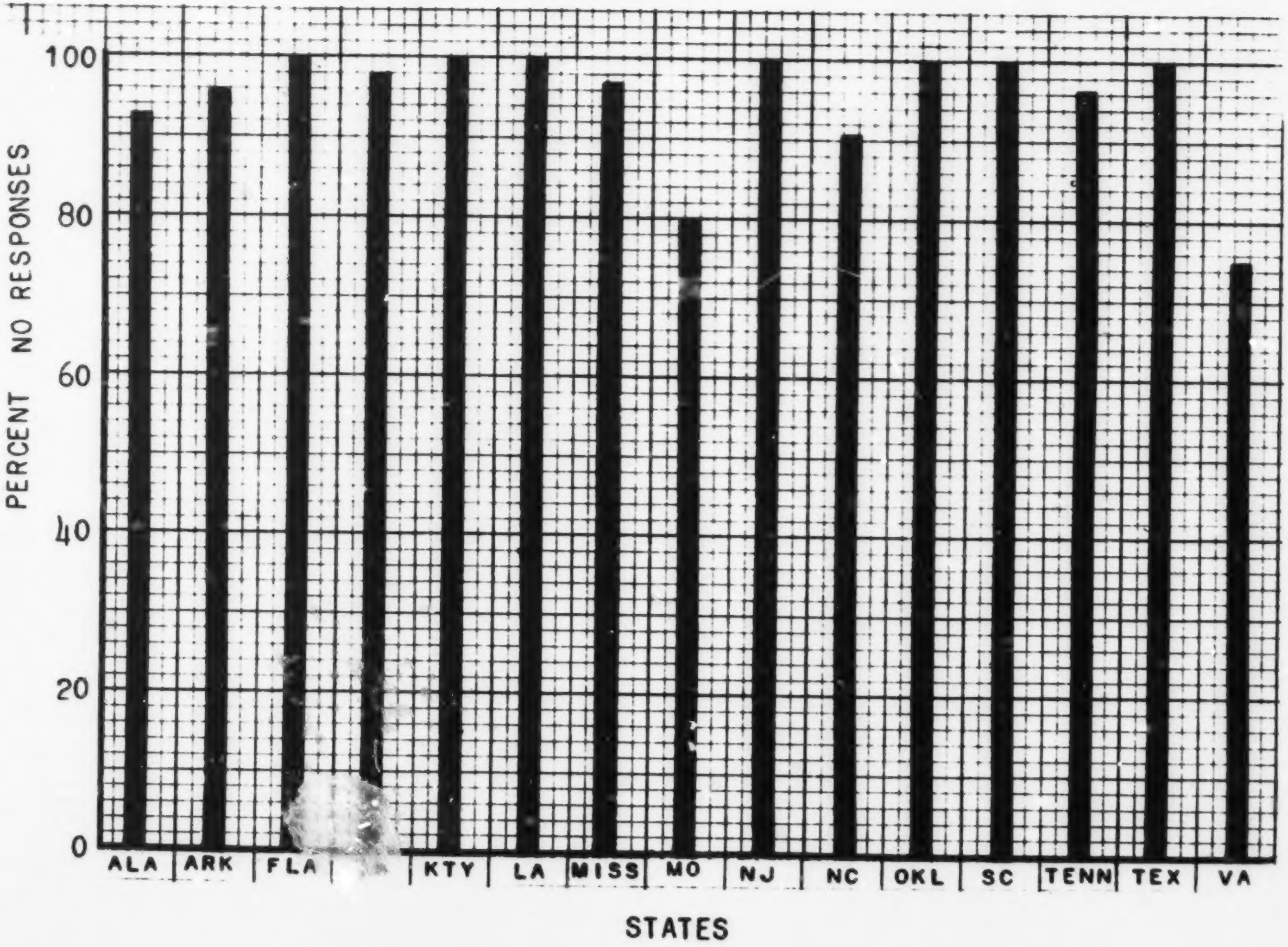

EXHIBIT XVIII

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 11. CAN PESTICIDES ENTER THE BODY THROUGH THE MOUTH ?

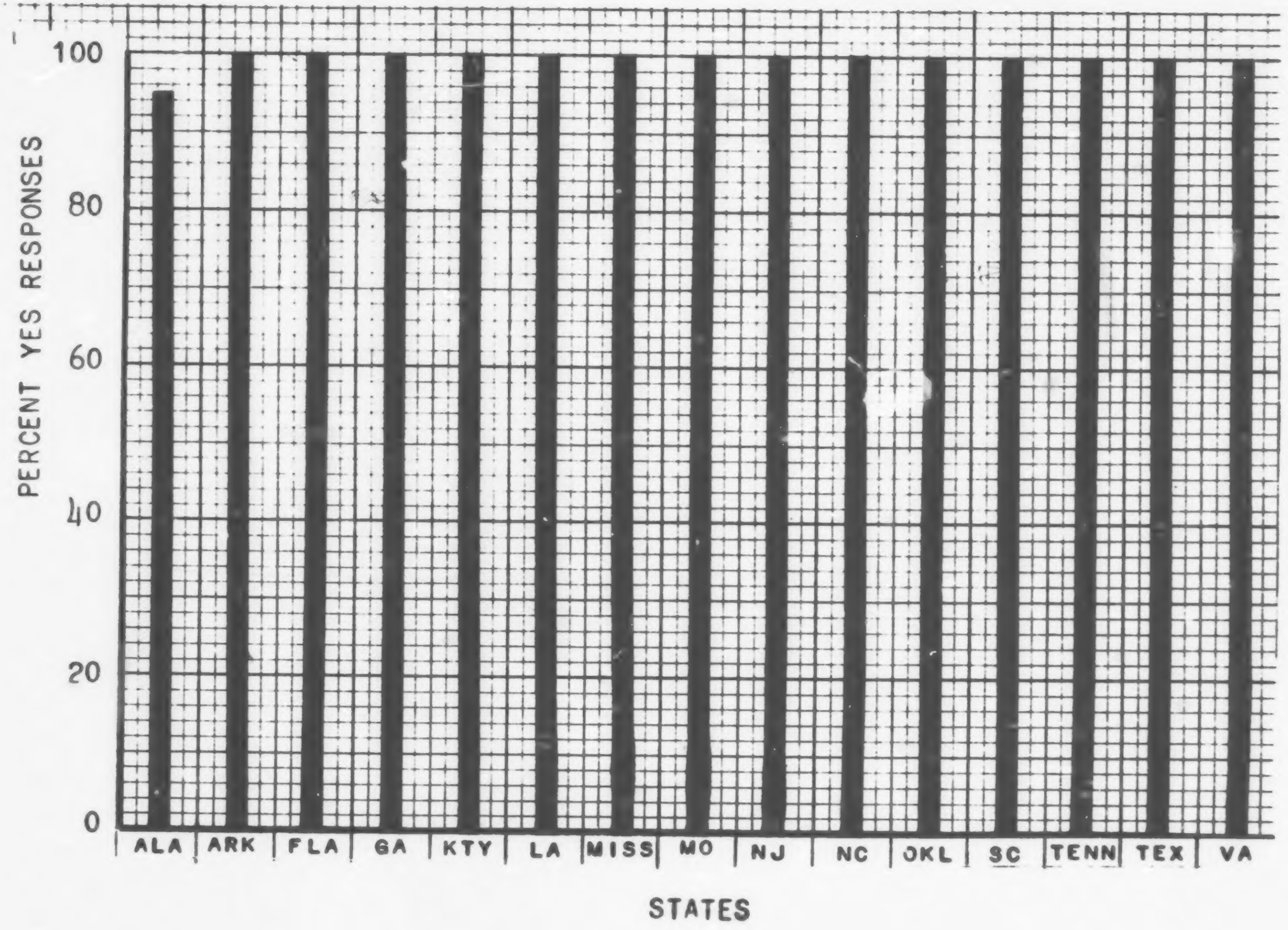

EXHIBIT XIX

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 12. CAN PESTICIDES ENTER THE BODY THROUGH THE SKIN ?

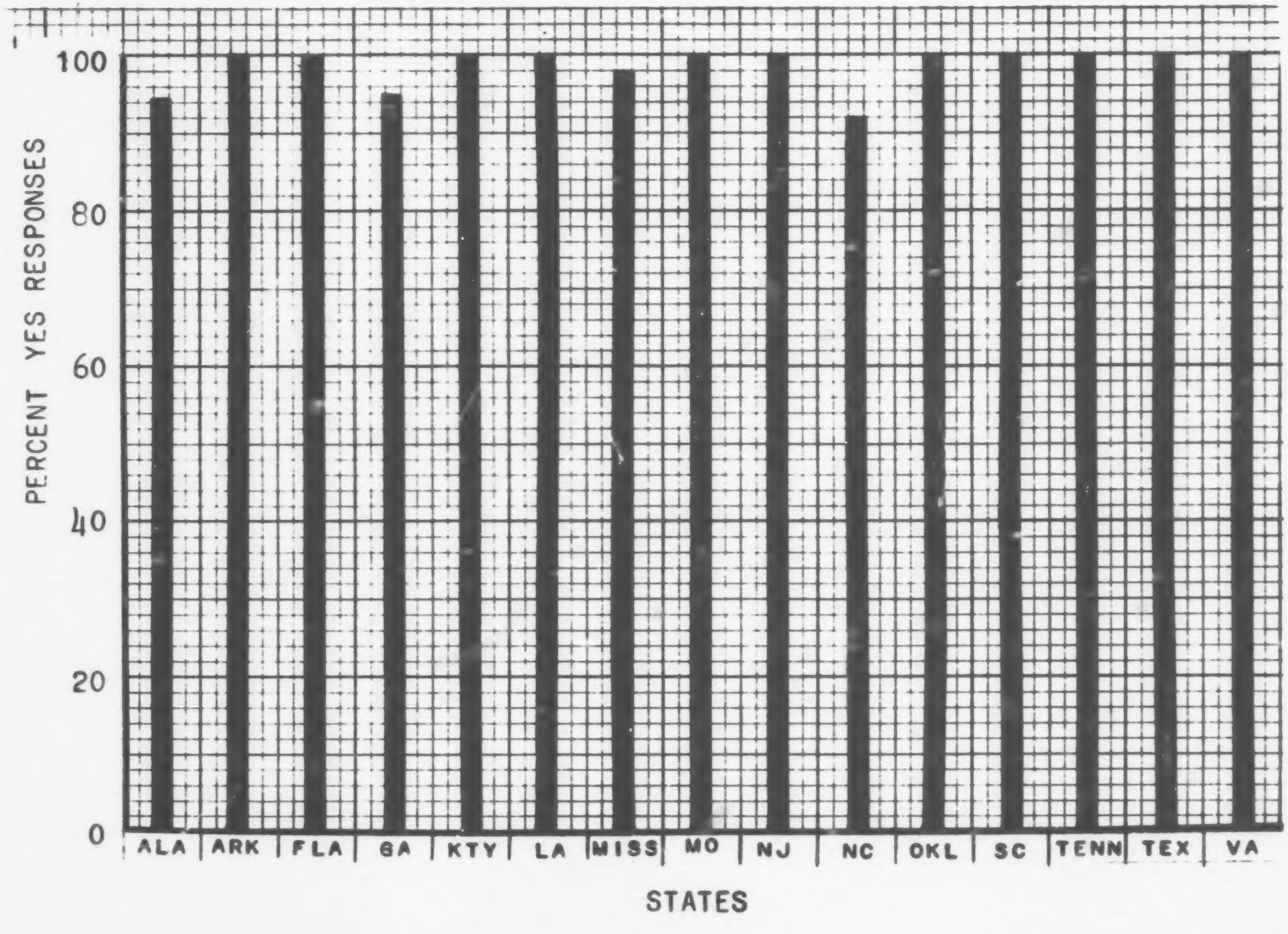

EXHIBIT XX

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 13. CAN PESTICIDES ENTER THE BODY THROUGH THE LUNGS ?

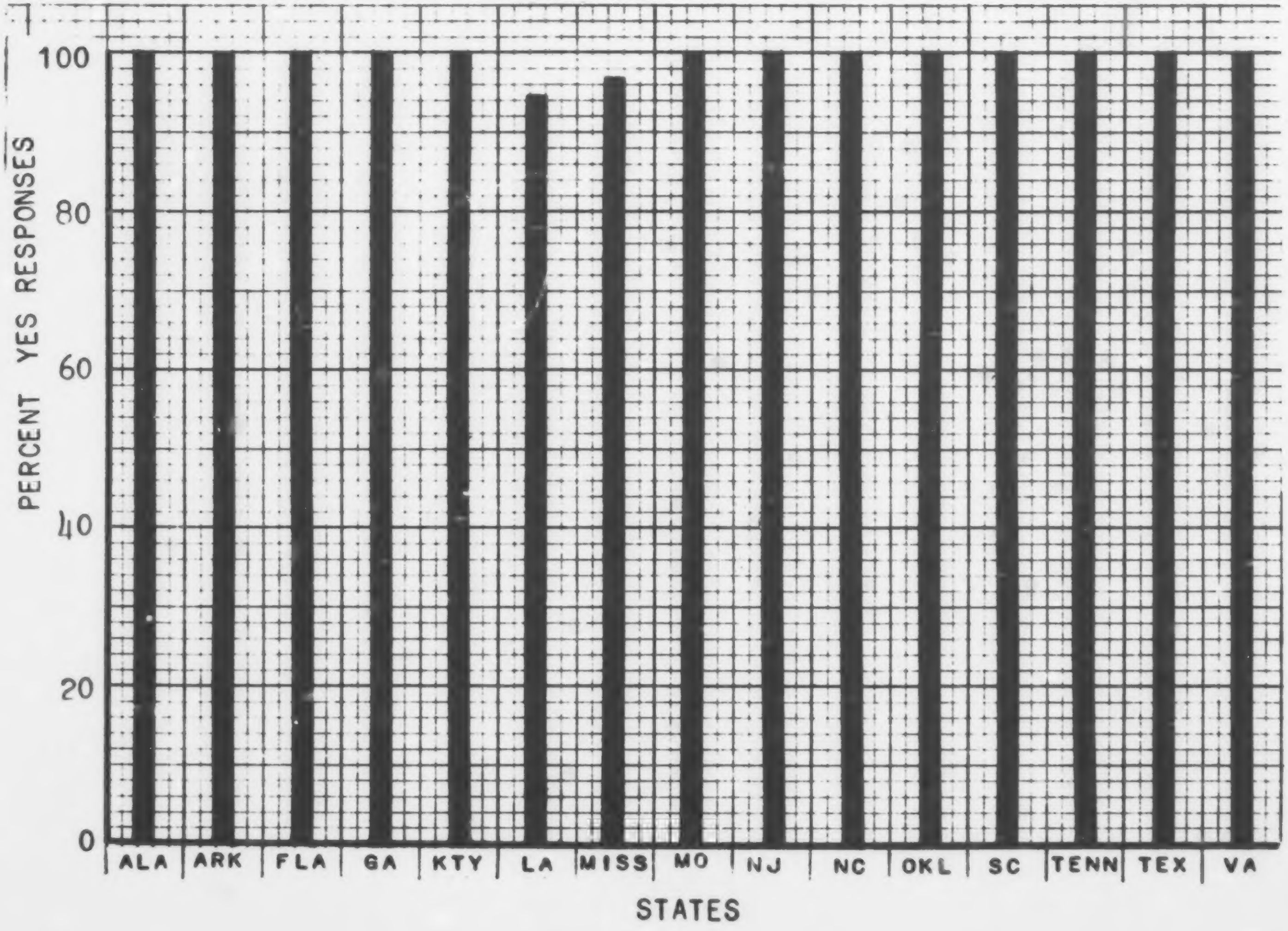

EXHIBIT XXI

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 14. SHOULD SPECIAL PROTECTIVE CLOTHING AND SAFETY EQUIPMENT BE WORN WHILE MIXING AND APPLYING PESTICIDE POISONS ?

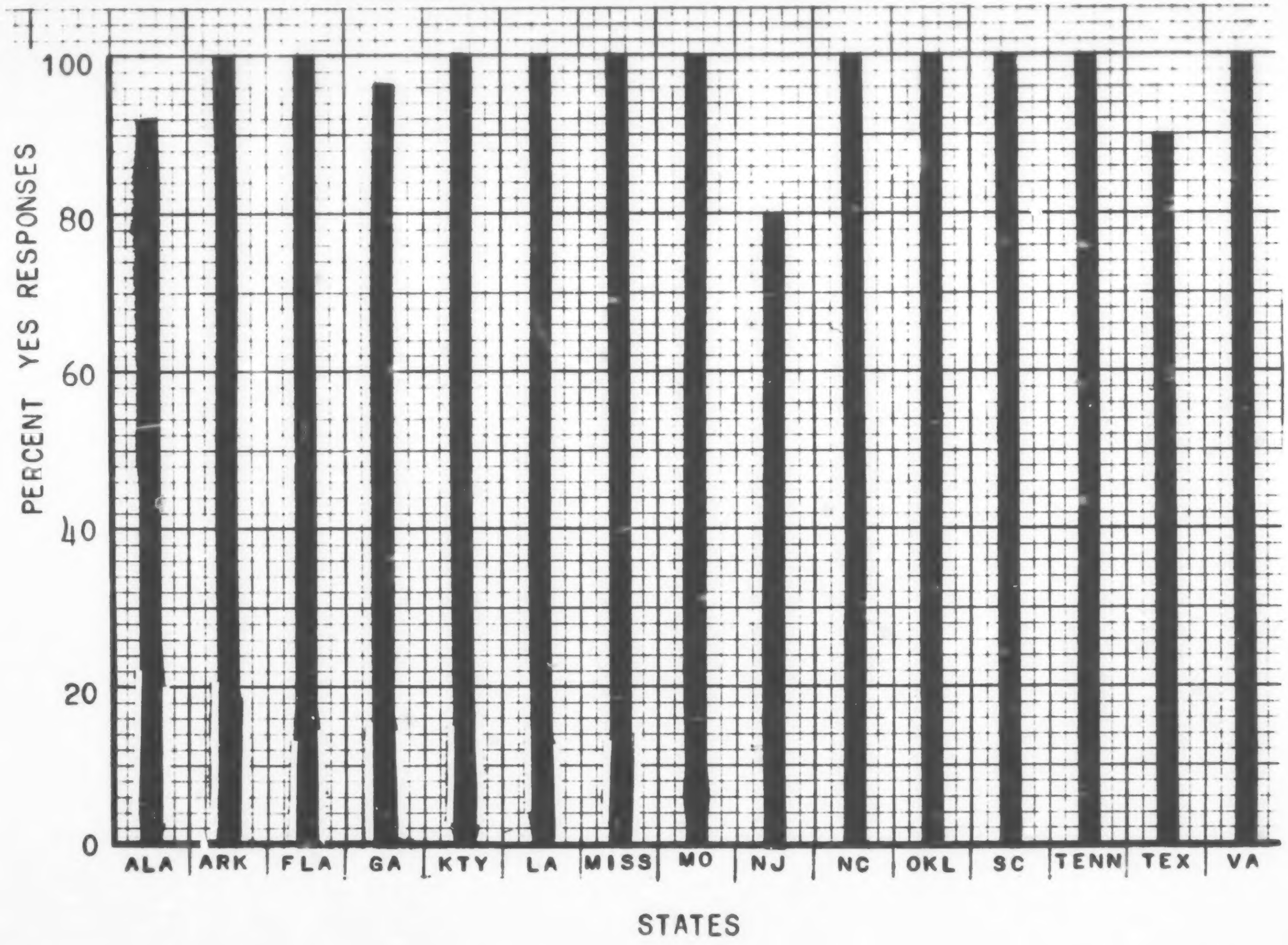

EXHIBIT XXII

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 15. SHOULD YOU WEAR THE FOLLOWING PIECES OF PROTECTIVE CLOTHING AND SAFETY EQUIPMENT WHEN WORKING WITH HIGHLY TOXIC PESTICIDES ?
A. LONG SLEEVE SHIRT ?

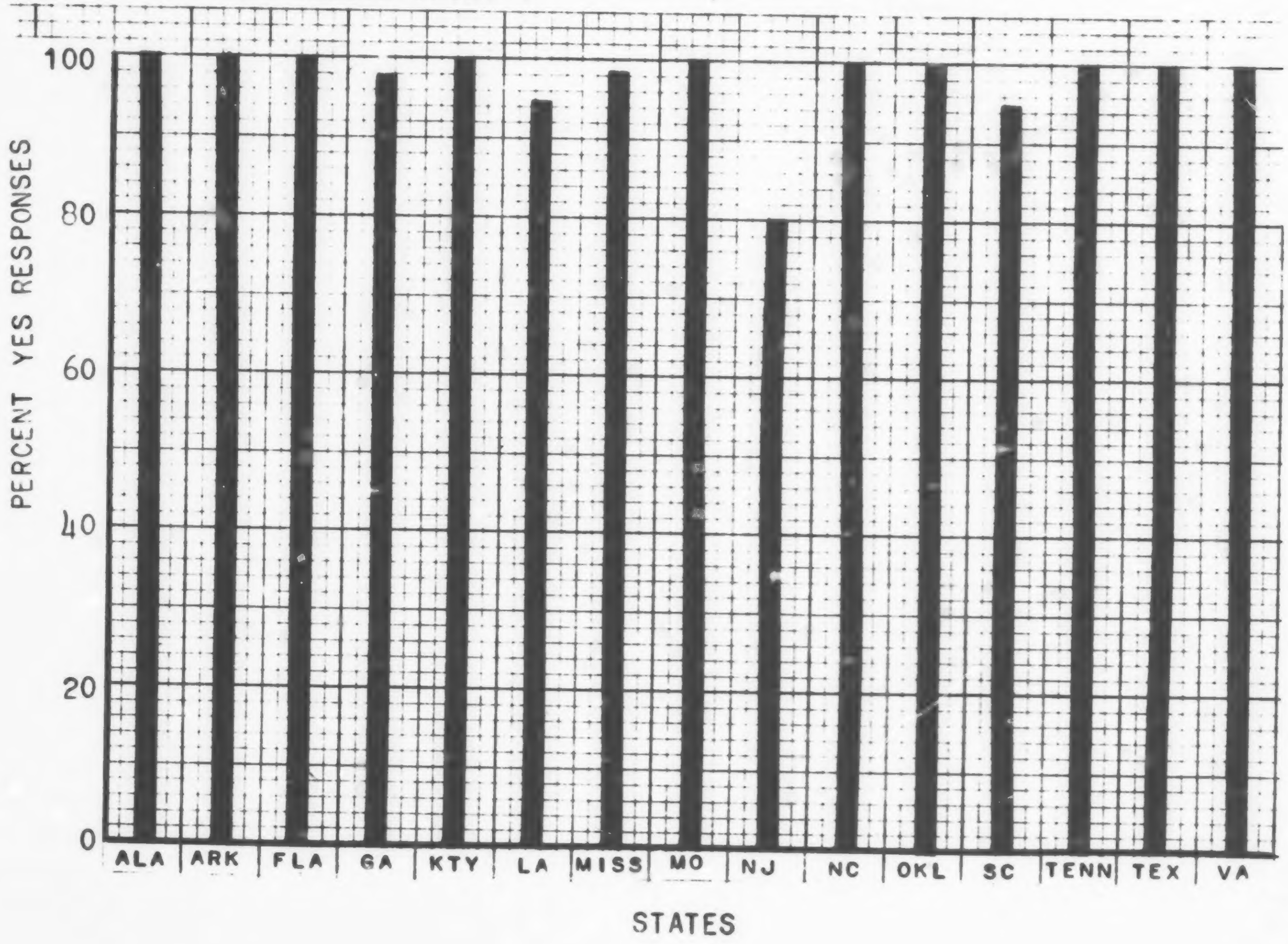

EXHIBIT XXIII

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 15. B. WIDE BRIM HAT ?

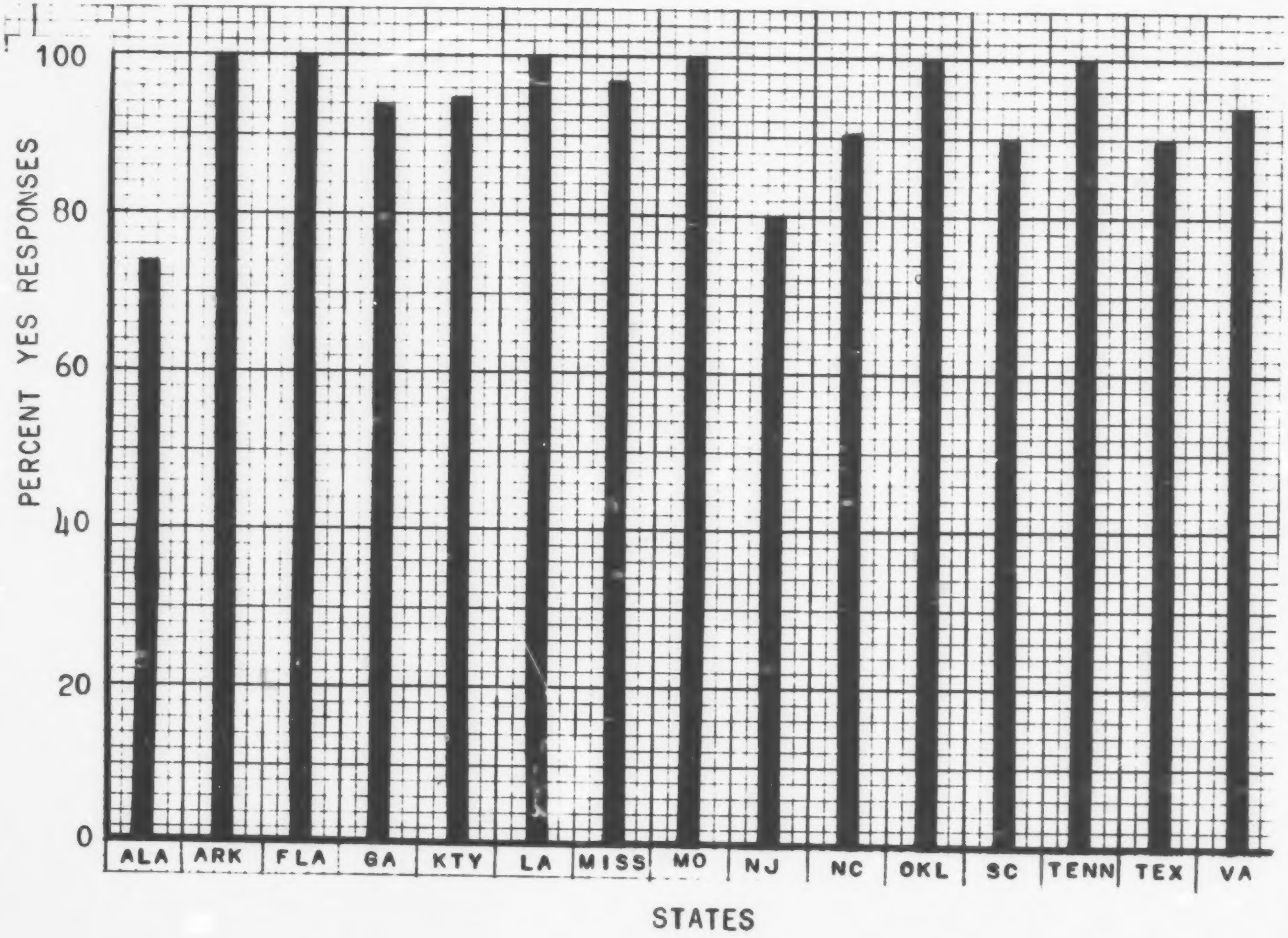

EXHIBIT XXIV

STATES' RESPONSES TO
FARMER QUESTIONNAIRE

QUESTION 15. C. RUBBER GLOVES ?

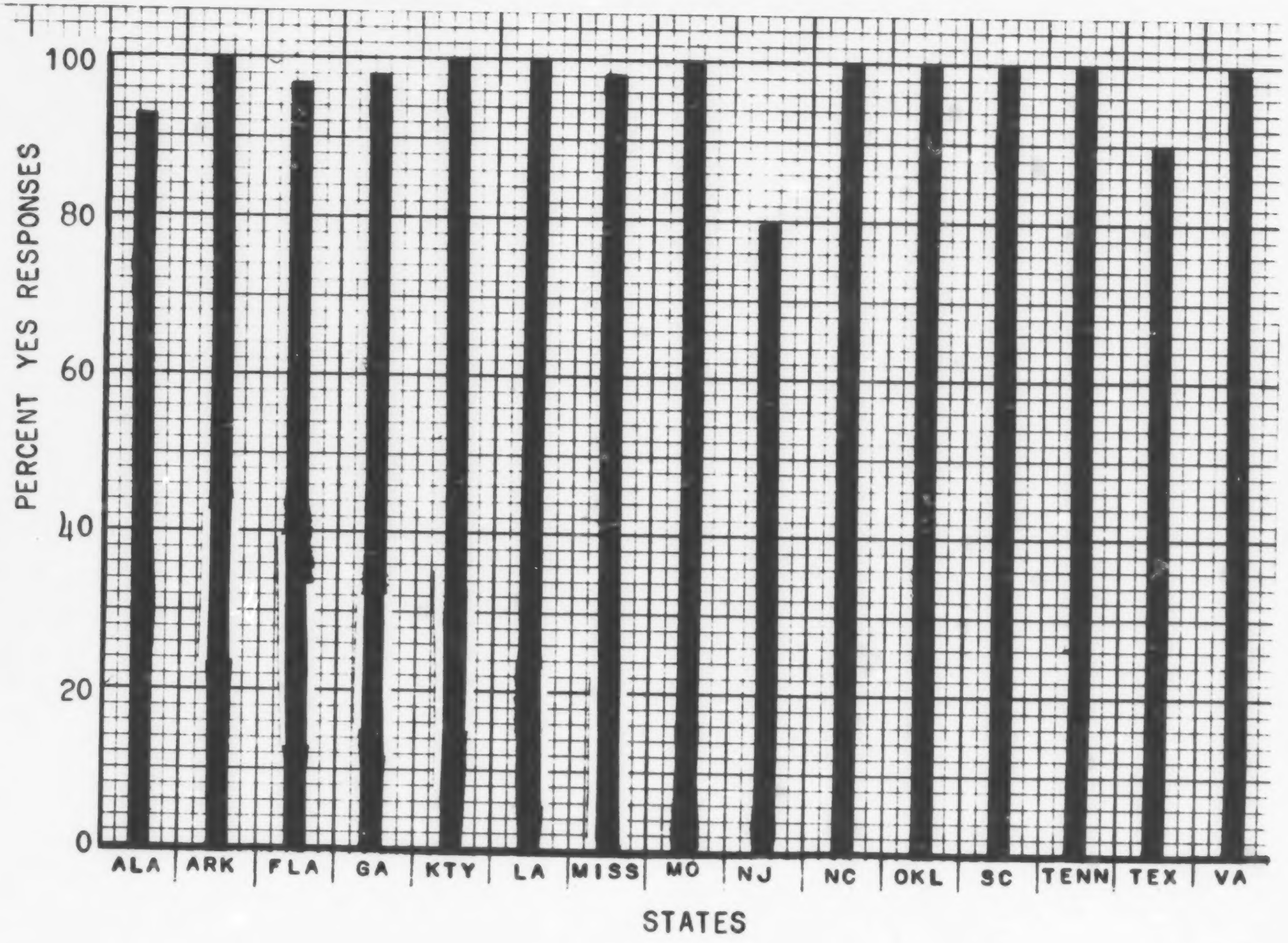

EXHIBIT XXV

STATES' RESPONSES TO FARMER QUESTIONNAIRE

QUESTION 15. D. WATERPROOF BOOTS ?

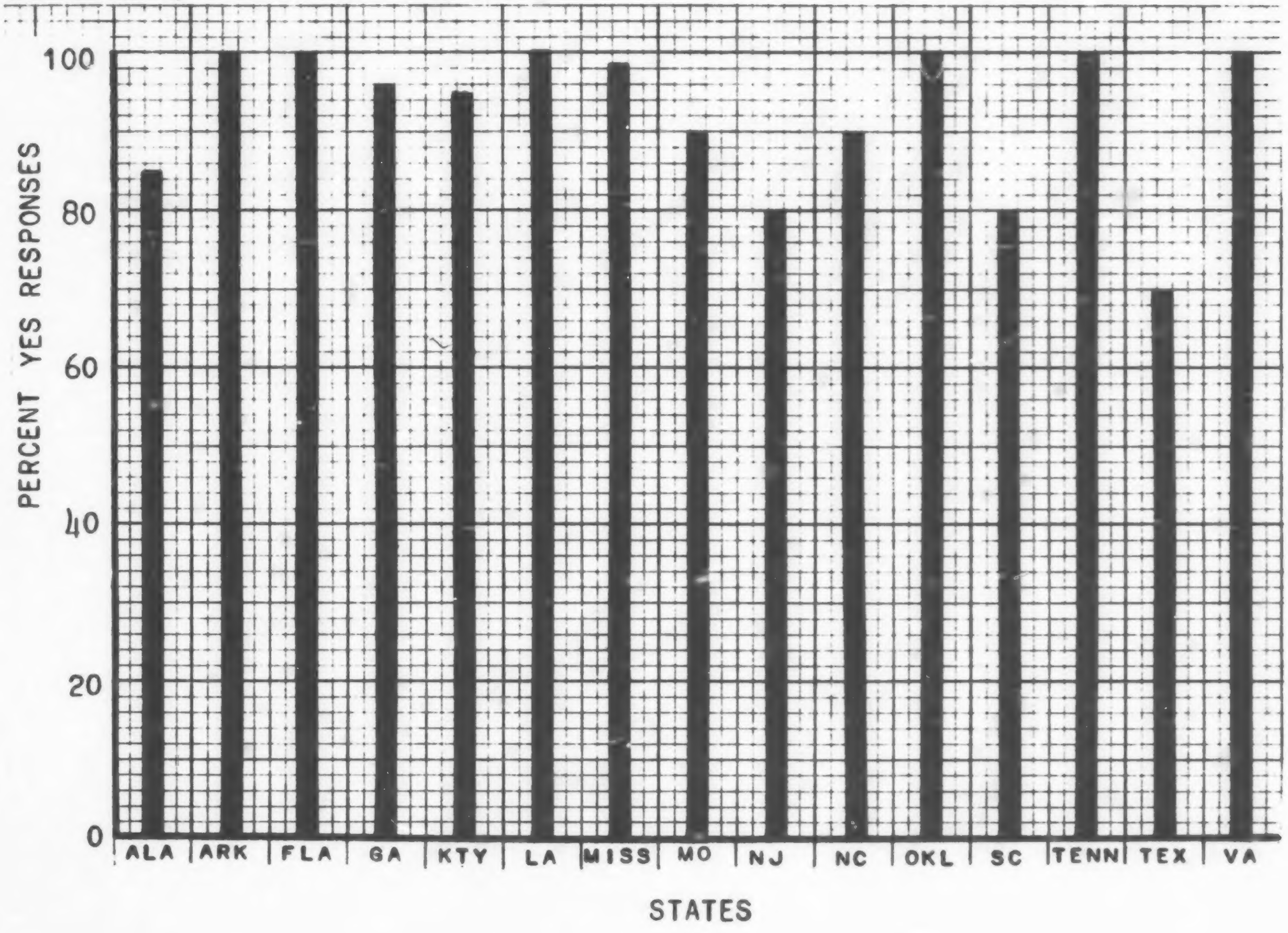

EXHIBIT XXVI

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 16. IS IT A GOOD PRACTICE TO SMOKE WHEN MIXING OR USING HIGHLY TOXIC PESTICIDES ?

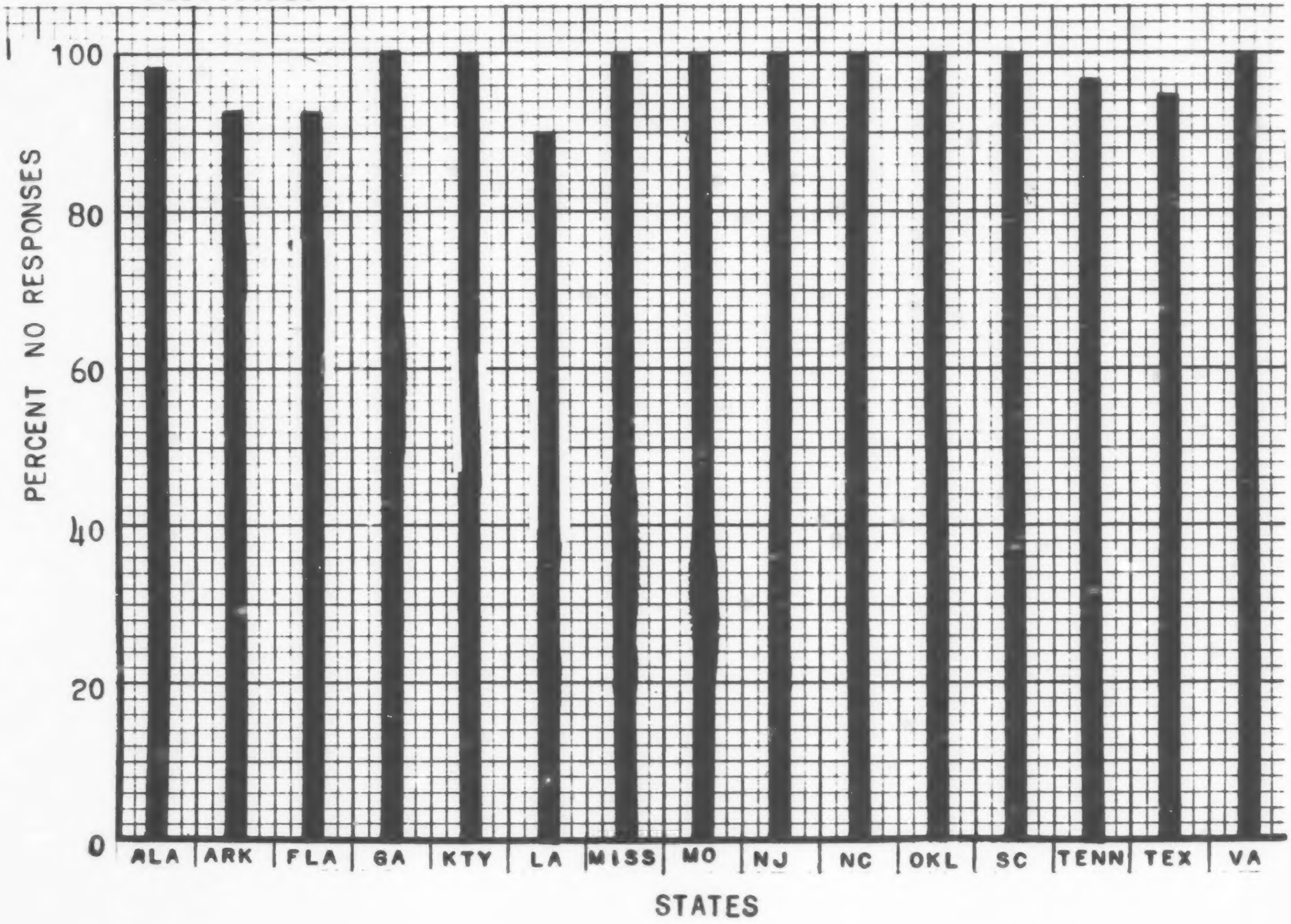

EXHIBIT XVII

STATES' RESPONSE TO

FARMER QUESTIONNAIRE

QUESTION 17. IS IT IMPORTANT TO CHANGE YOUR CLOTHES EVERY DAY WHEN YOU ARE MIXING AND APPLYING PESTICIDES ?

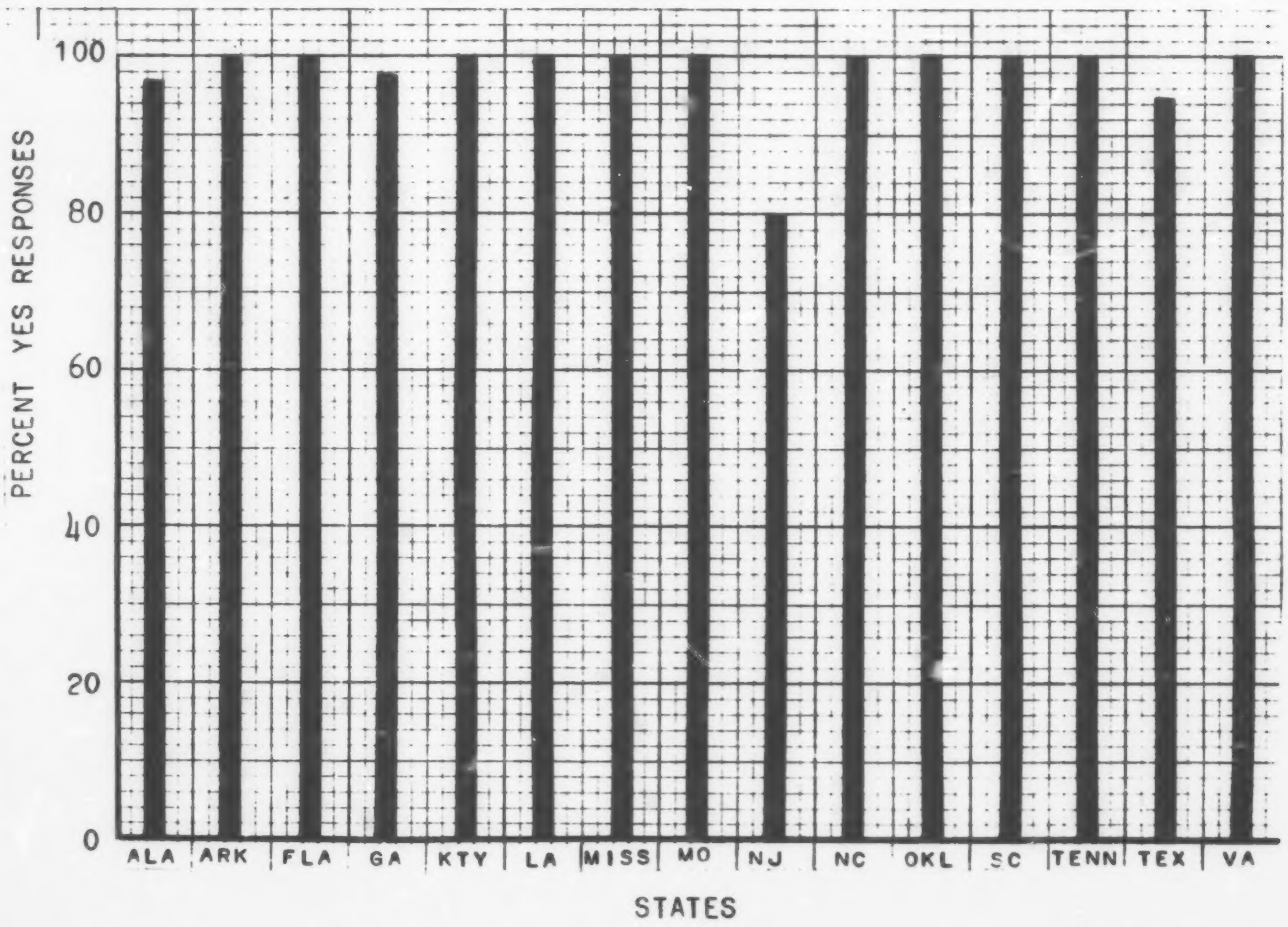

EXHIBIT XXVIII

STATES' RESPONSE TO

FARMER QUESTIONNAIRE

QUESTION 18. SHOULD CLOTHES WORN WHILE MIXING AND APPLYING PESTICIDES BE WASHED WITH THE REST OF THE FAMILY LAUNDRY ?

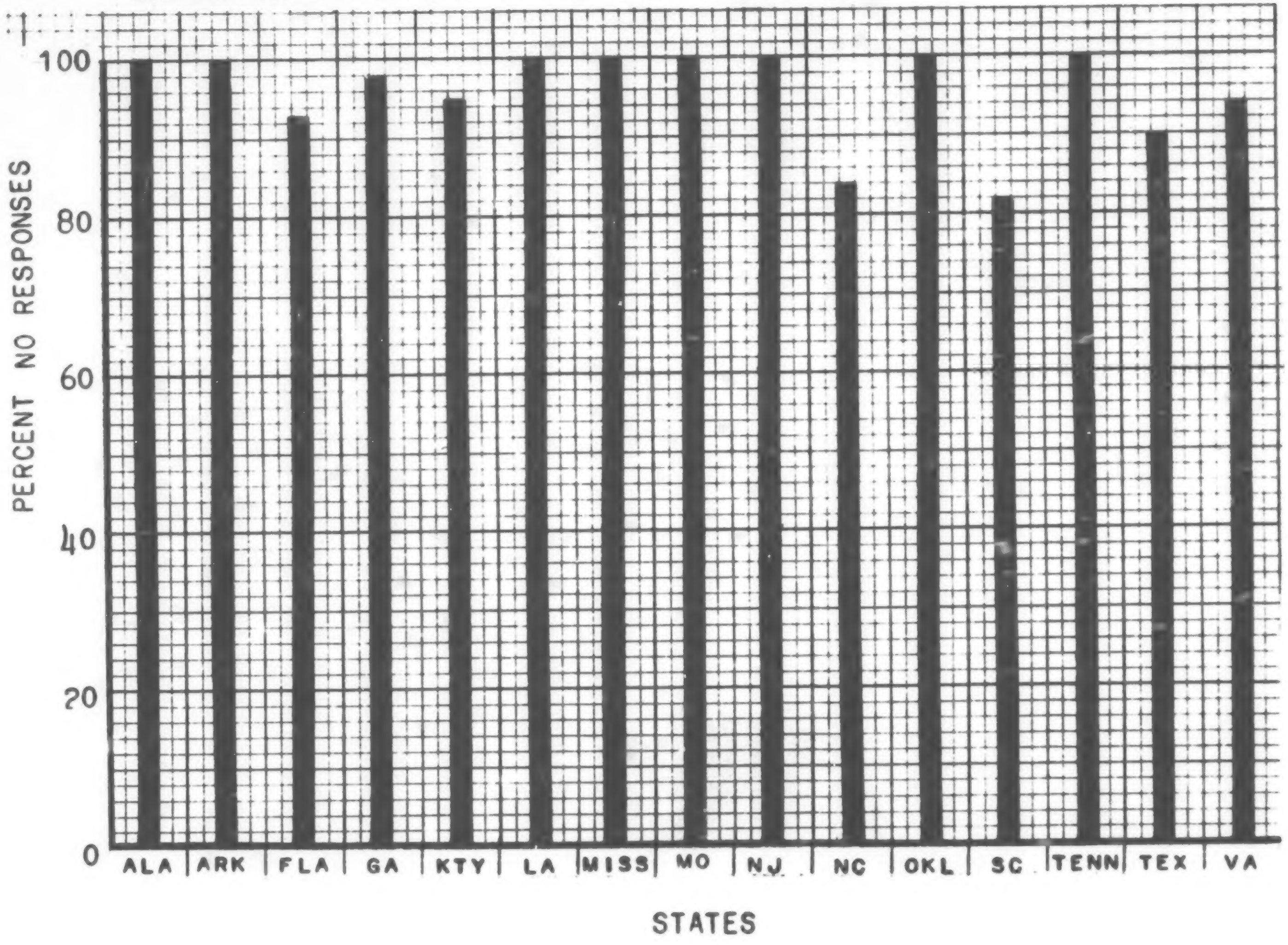

EXHIBIT XXIX

STATES' RESPONSES TO
FARMER QUESTIONNAIRE

QUESTION 19. IS IT IMPORTANT THAT SOMEONE KNOW WHERE YOU ARE AND WHAT YOUR TIME SCHEDULE IS IF YOU HAVE TO MIX AND APPLY HIGHLY TOXIC PESTICIDES BY YOURSELF ?

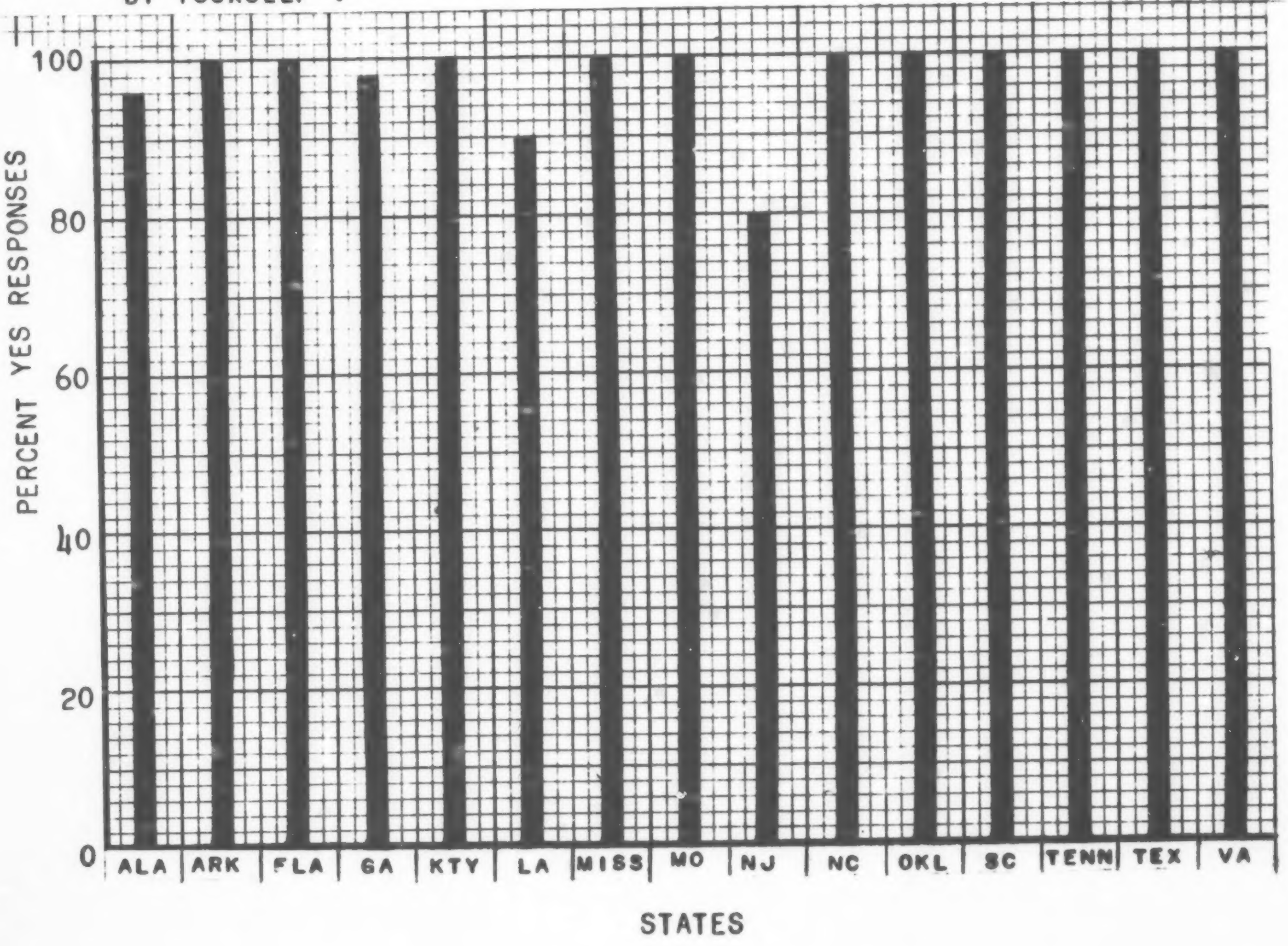

EXHIBIT XXX

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 20. IS IT SAFE TO APPLY PESTICIDES ON VERY WINDY DAYS ?

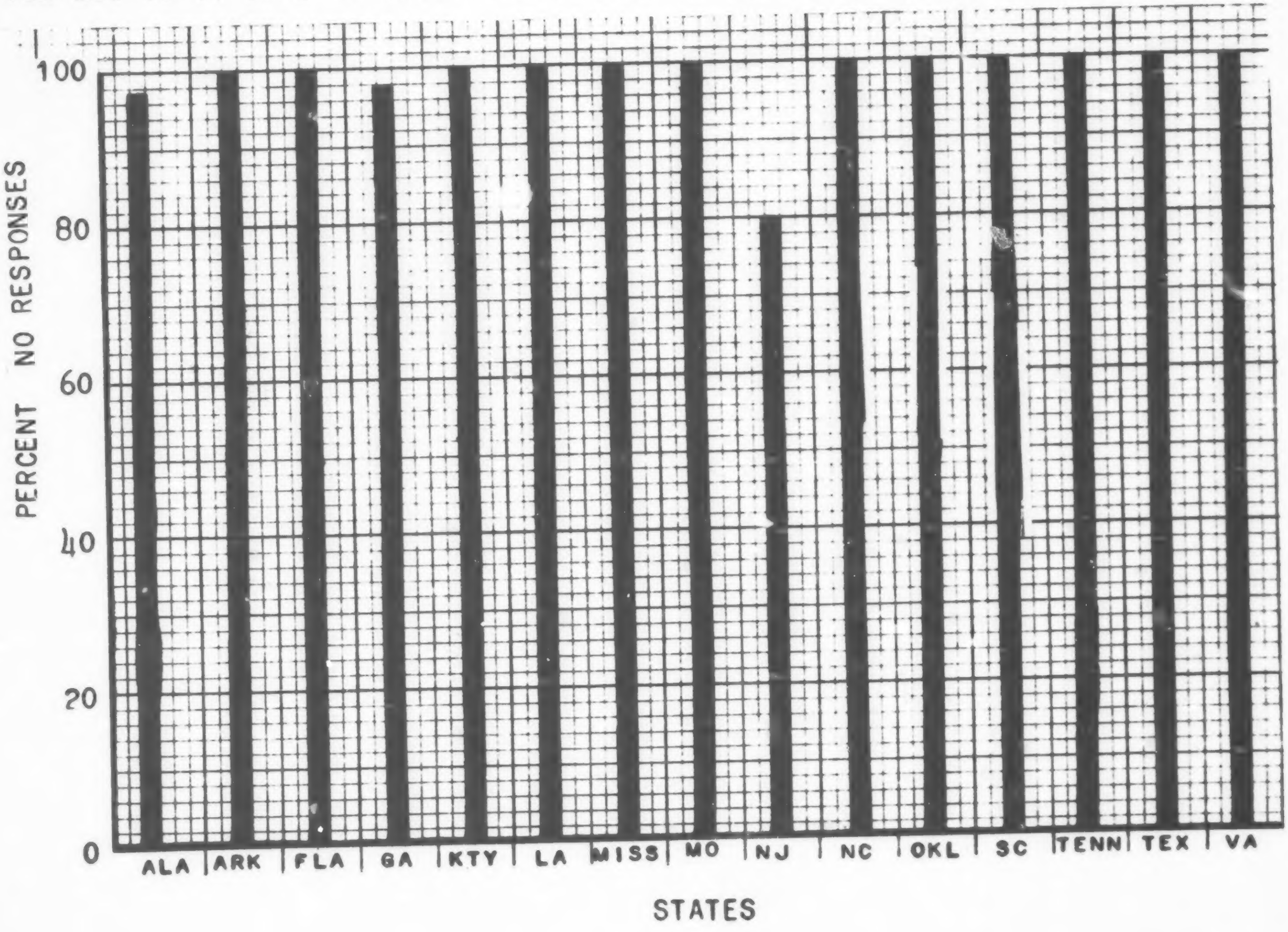

EXHIBIT XXXI

STATES' RESPONSES TO

FARMER QUESTIONNAIRE

QUESTION 21. IS IT IMPORTANT THAT YOU SEE A DOCTOR IMMEDIATELY IF YOU BECOME SICK AFTER HANDLING AND APPLYING HIGHLY TOXIC PESTICIDES ?

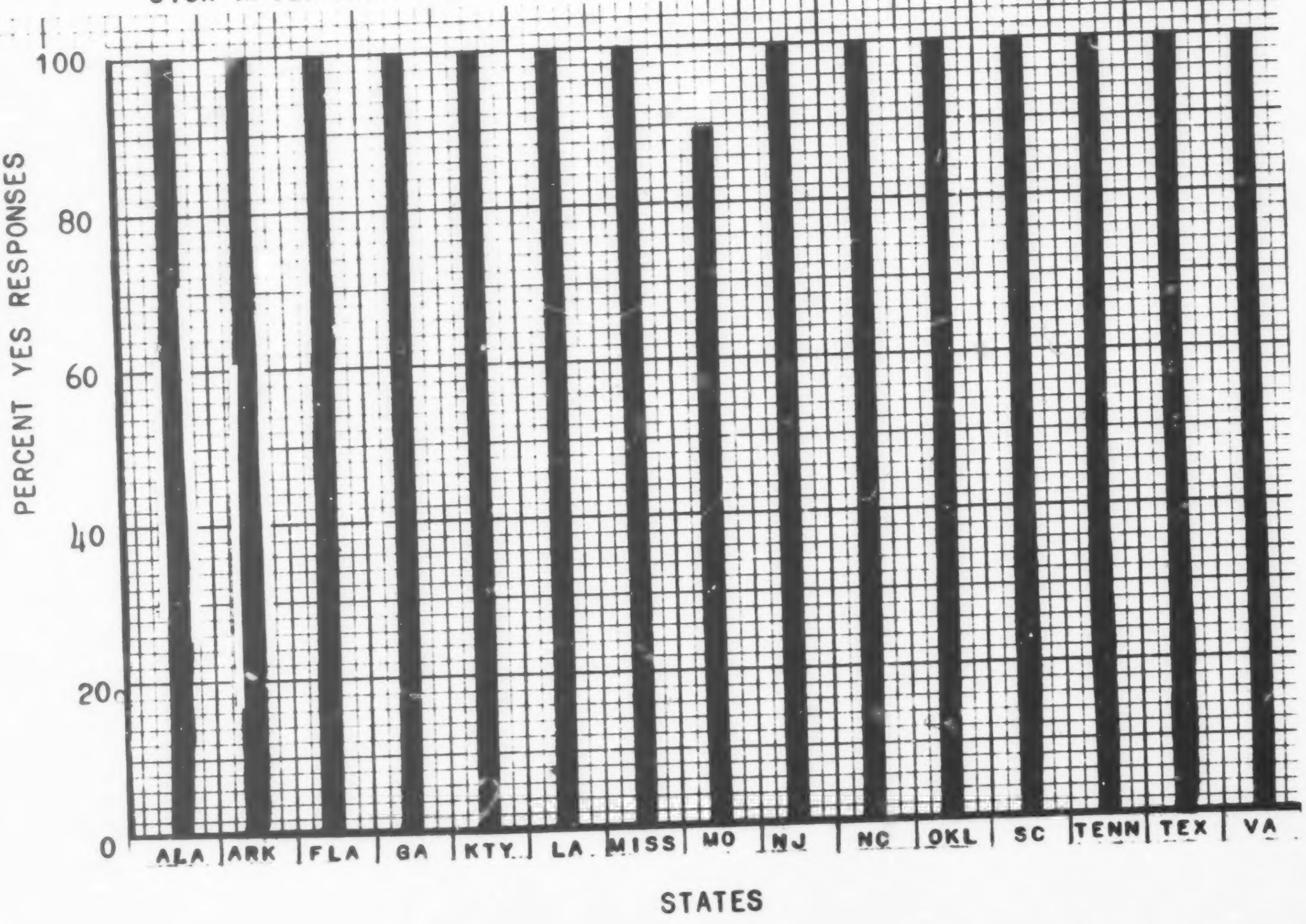

EXHIBIT XXXII

Form Approved
OMB No. 158-S73008

EVALUATION PROJECT SAFEGUARD

MEDICAL QUESTIONNAIRE

FOR

U. S. ENVIRONMENTAL PROTECTION AGENCY

1. Did you receive a letter from the U.S. Environmental Protection Agency informing you of PROJECT SAFEGUARD?	Yes ☐ No ☐
2. Did you receive a booklet entitled "Diagnosis And Treatment of Poisoning By Pesticides"?	Yes ☐ No ☐
3. Did you find the booklet helpful in the diagnosis and treatment of pesticide poisoning?	Yes ☐ No ☐
4. Were you personally associated with any patients whose recovery from highly toxic pesticide poisoning was expedited by information contained in the booklet?	Yes ☐ No ☐
5. Do you feel that there is additional information that should be included in this booklet that would help you or your associates? If yes please explain ______________________ ______________________________ ______________________________ ______________________________ ______________________________	Yes ☐ No ☐
6. In your opinion, has there been an increase in the frequency of occurrence of pesticide poisoning since 1 January 1973.	Yes ☐ No ☐ No Opinion ☐

ALL INFORMATION SUPPLIED ON THIS QUESTIONNAIRE WILL BE KEPT CONFIDENTIAL AND WILL BE USED ONLY TO EVALUATE PROJECT SAFEGUARD

EXHIBIT XXXIII

RESPONSE TO

MEDICAL QUESTIONNAIRE

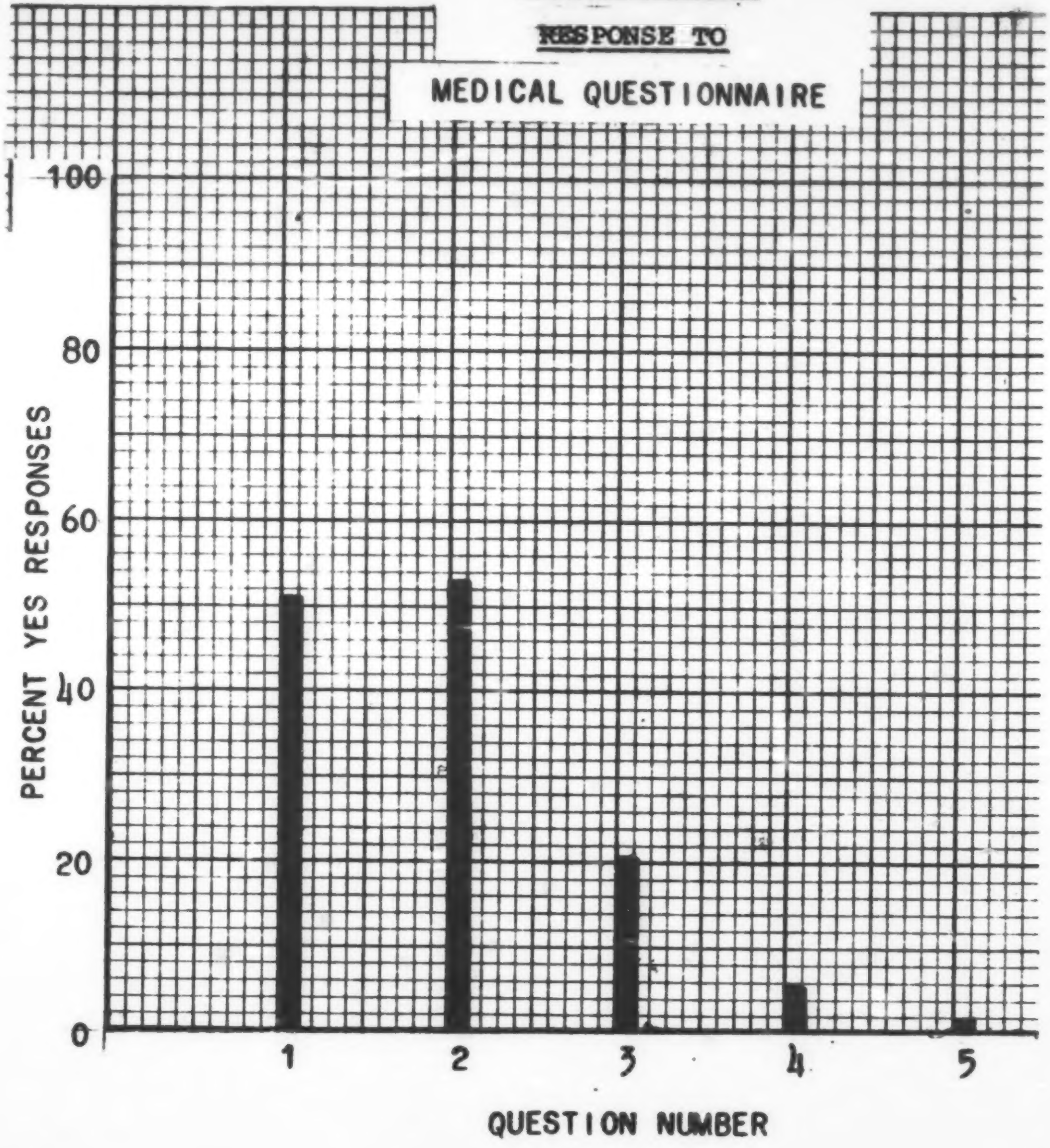

EXHIBIT XXXIV

RESPONSE TO

MEDICAL QUESTIONNAIRE

QUESTION 6. IN YOUR OPINION HAS THERE BEEN AN INCREASE IN THE FREQUENCY OF OCCURRENCE OF PESTICIDE POISONING SINCE 1 JANUARY 1973.

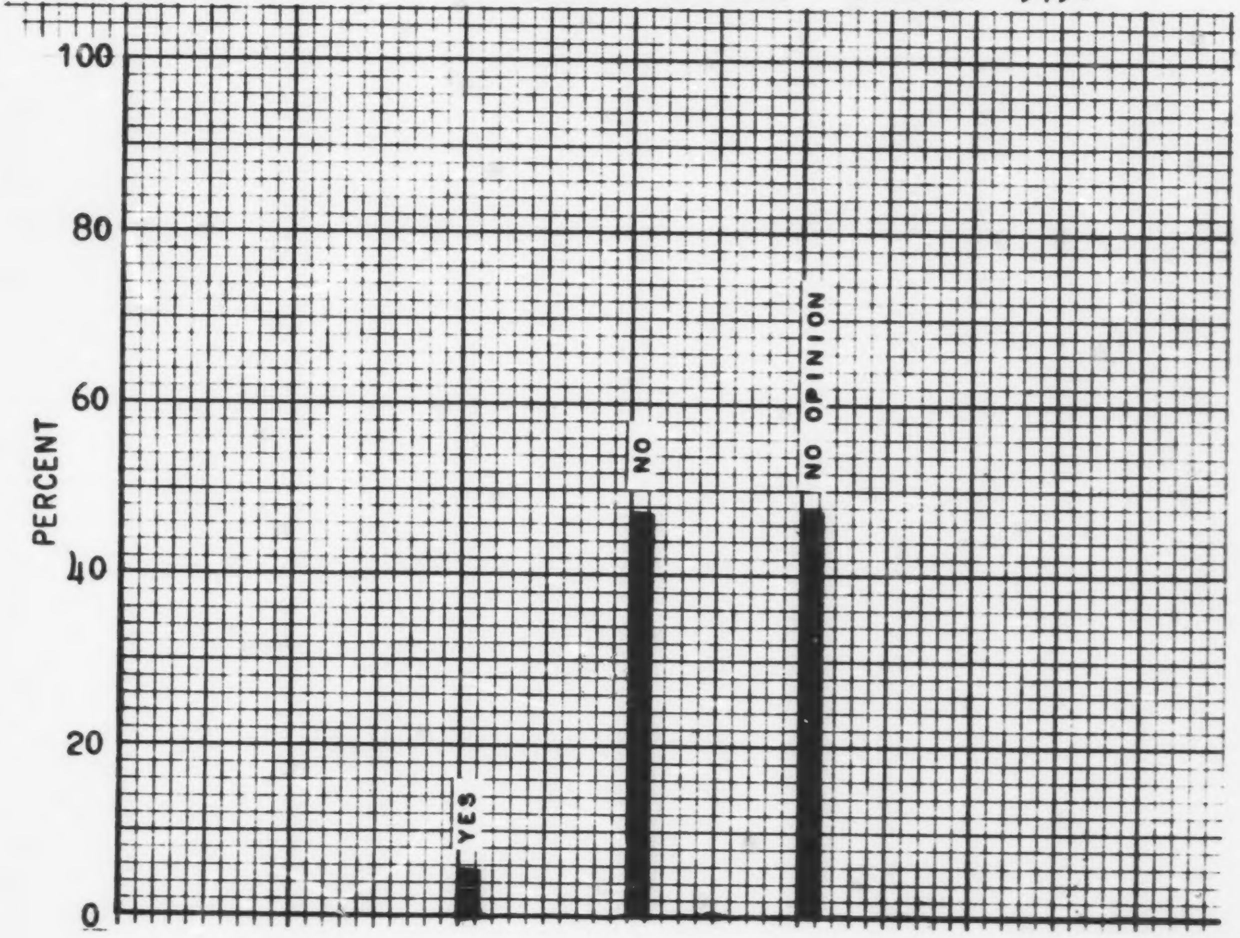

EXHIBIT XXXV

Form Approved
OMB No. 154-S73006

EVALUATION PROJECT SAFEGUARD

POISON CONTROL CENTER/HOSPITAL QUESTIONNAIRE

FOR

U. S. ENVIRONMENTAL PROTECTION AGENCY

1. Did you receive a letter from the U.S. Environmental Protection Agency informing you of PROJECT SAFEGUARD?	Yes ☐	No ☐
2. Did you receive a booklet entitled "Diagnosis and Treatment of Poisoning by Pesticides".	Yes ☐	No ☐
3. Did you find the booklet helpful in the diagnosis and treatment of pesticide poisonings?	Yes ☐	No ☐
4. Do you feel that there is additional information that should be included in this booklet that would help you or your associates? If yes please explain ____________ ____________ ____________ ____________	Yes ☐	No ☐
5. In your opinion, has there been an increase in the frequency of occurrence of pesticides poisoning since 1 January 1973?	Yes ☐	No ☐

6 Number of pesticide poisonings recorded in 1972.

CAUSE	EMERGENCY PHONE CALLS	EMERGENCY TREATMENT	HOSPITAL ADMISSIONS
Dermal Exposure	______	______	______
Respiratory Exposure	______	______	______
Ingestion	______	______	______

7. Number of pesticide poisonings recorded in 1973 to date:

	EMERGENCY PHONE CALLS	EMERGENCY TREATMENT	HOSPITAL ADMISSIONS
Dermal Exposure	______	______	______
Respiratory Exposure	______	______	______
Ingestion	______	______	______

8 Severity of Poisoning:

Classification	1972	1973
Latent	___	___
Mild	___	___
Moderate	___	___
Severe	___	___

9. Number of deaths attributed to:

CAUSE	1972	1973
Dermal Exposure	___	___
Respiratory Exposure	___	___
Ingestion	___	___

10. In your opinion, rank in the order of importance the reasons for the change in the number of pesticide incidents reported from 1972 to 1973:

- ☐ Increased Awareness
- ☐ Improved Reporting
- ☐ Use of More Toxic Pesticides
- ☐ Other ____________

If you have no recorded cases of pesticide poisoning do not answer questions 6, 7, 8, and 9

ALL INFORMATION SUPPLIED ON THIS QUESTIONNAIRE WILL BE KEPT CONFIDENTIAL AND WILL BE USED ONLY TO EVALUATE PROJECT SAFEGUARD

EI Form 7[illegible]37-4

(Rev.) 14 September 1973

EXHIBIT XXXVI

RESPONSE TO

POISON CONTROL CENTERS/HOSPITAL QUESTIONNAIRE

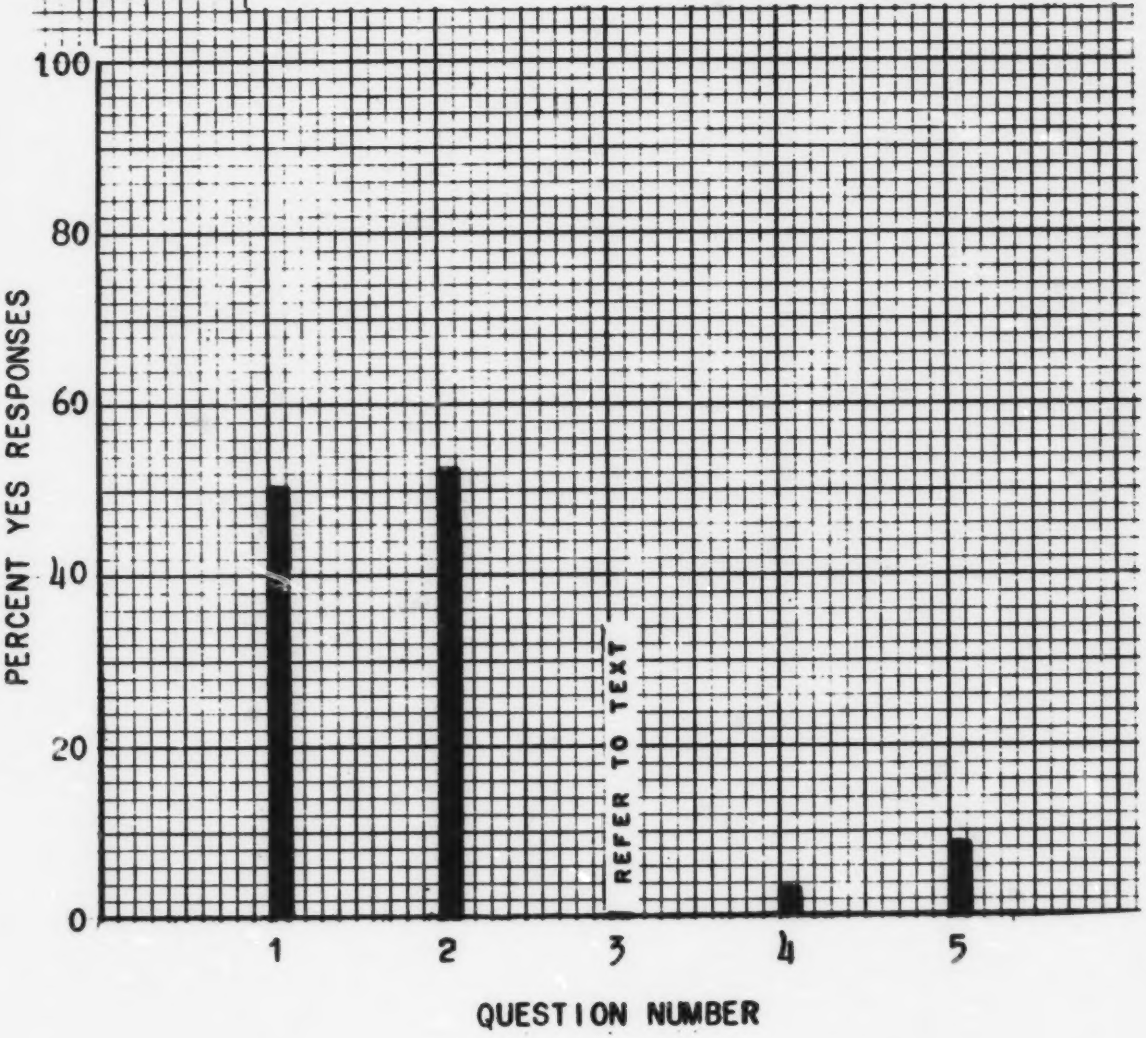

EXHIBIT XXXVII

RESPONSE TO

POISON CONTROL CENTER/HOSPITAL QUESTIONNAIRE

QUESTION 10. IN YOUR OPINION RANK IN THE ORDER OF IMPORTANCE THE REASONS FOR THE CHANGE IN THE NUMBER OF PESTICIDE INCIDENTS REPORTED FROM 1972 TO 1973

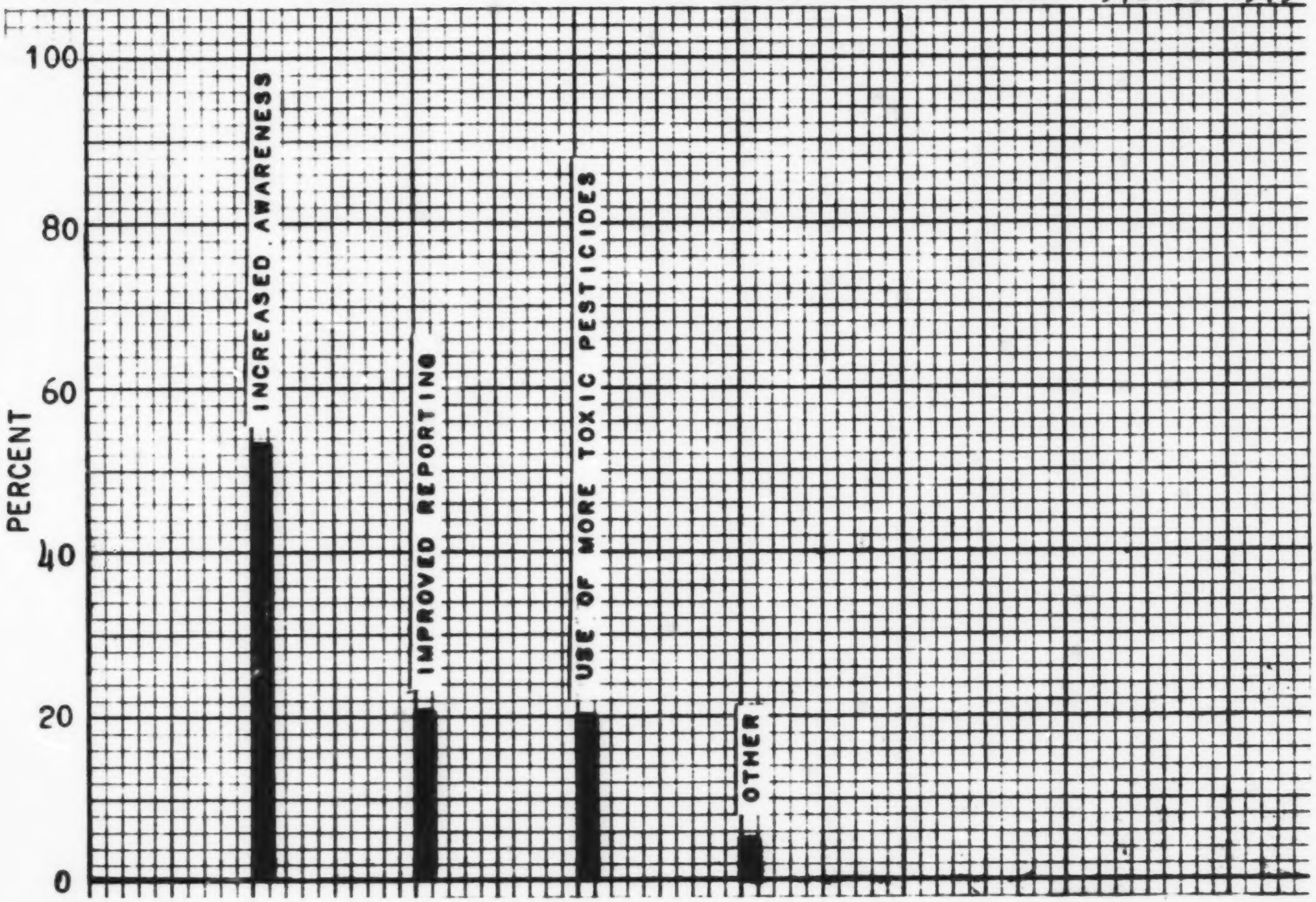

EXHIBIT XXXVIII

Form Approved
OMB No 158-S73008

EVALUATION PROJECT SAFEGUARD

APPLICATOR QUESTIONNAIRE

FOR

U. S. ENVIRONMENTAL PROTECTION AGENCY

1. Are you aware of the health hazards associated with the highly toxic DDT substitute pesticides?	Yes ☐	No ☐
2. Should highly toxic pesticides be kept under separate lock and key?	Yes ☐	No ☐
3. Should pesticide storage areas be posted with warning notices?	Yes ☐	No ☐
4. Is it important to check labels before using highly toxic pesticides?	Yes ☐	No ☐
5. Is it a good practice to thoroughly wash out mixing equipment between mixings?	Yes ☐	No ☐
6. Should pesticides be stored in other than their original containers?	Yes ☐	No ☐
7. Clothing used in pesticide work should be washed separately from all other clothes.	Yes ☐	No ☐
8. Are you familiar with the symptoms of pesticide poisoning?	Yes ☐	No ☐

9. If you become ill after using pesticides, should you seek medical treatment immediately?	Yes ☐	No ☐
10. Are wind drift conditions an important consideration in the application procedure of pesticides?	Yes ☐	No ☐

11. How did you become aware of the dangers of the highly toxic pesticides? Check all that apply.

☐ Newspaper	☐ Dealer
☐ Radio	☐ Formulators Instructions
☐ Television	☐ Organization Meetings
☐ Magazine	☐ County or Extension Agency

12. When mixing highly toxic pesticides which of the following protective clothing is recommended? Check all that apply.

☐ Wide Brim Hat	☐ Plastic or Rubber Apron
☐ Waterproof Boots	☐ Full Skin Coverage Clothes
☐ Respirator	☐ Rubber Gloves
☐ Safety Goggles	

13. Equipment for mixing or applying pesticides should be cleaned:

☐ After Each Use
☐ Daily
☐ Weekly
☐ Other

14. Protective clothing should be washed?

☐ Alone
☐ With Other Clothes

15. Rinsing, crushing and burying empty pesticide containers (small sizes, 5 gallons or less) is a good way to dispose of them.	Yes ☐	No ☐

ALL INFORMATION SUPPLIED ON THIS QUESTIONNAIRE WILL BE KEPT CONFIDENTIAL AND WILL BE USED ONLY TO EVALUATE PROJECT SAFEGUARD

EI Form 73[illegible]37-6

(Rev.) 14 September 1973

Reproduced from best available copy.

EXHIBIT XXXIX

RESPONSE TO

APPLICATOR QUESTIONNAIRE

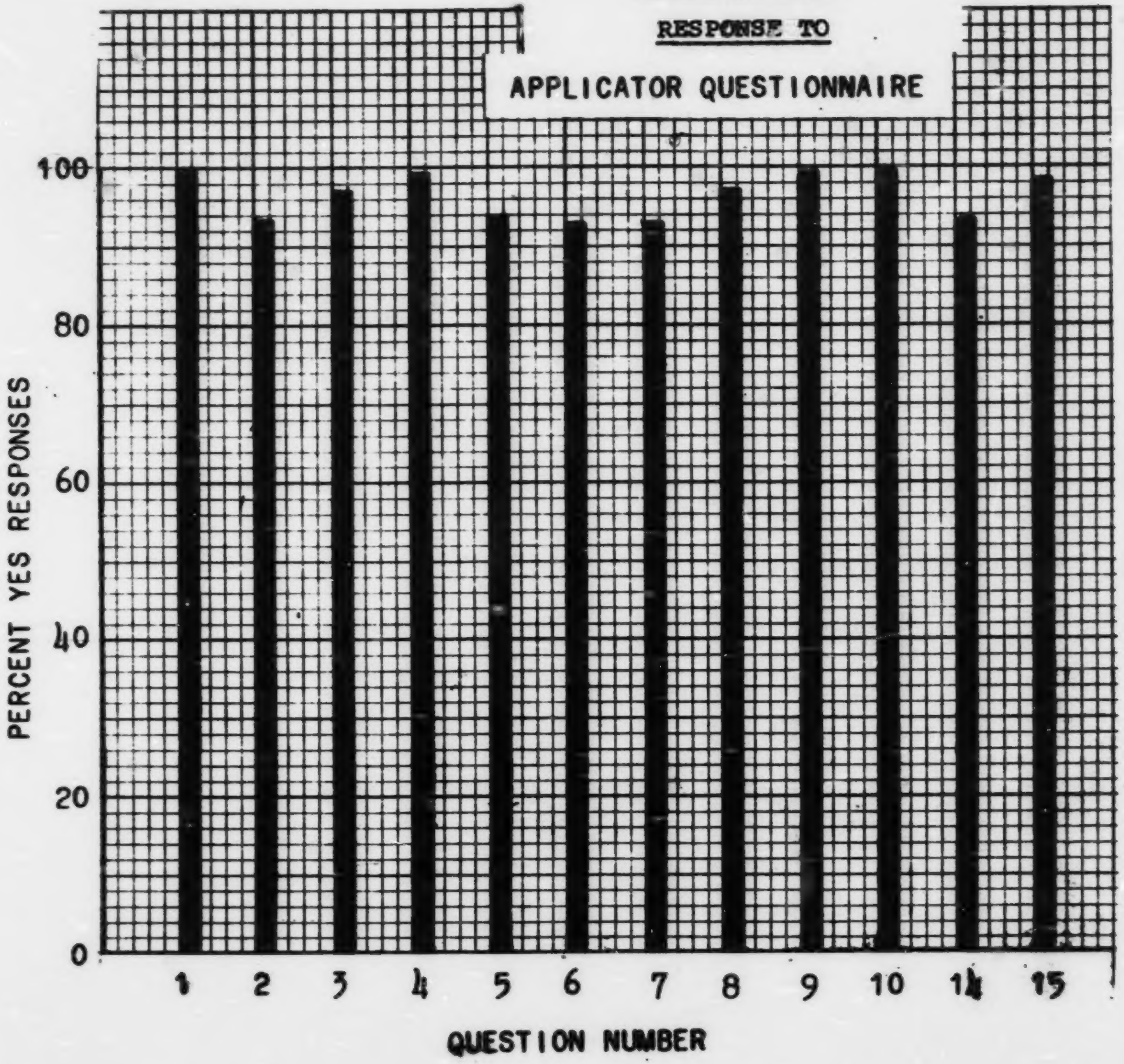

EXHIBIT XL

RESPONSE TO
APPLICATOR QUESTIONNAIRE

QUESTION 11. HOW DID YOU BECOME AWARE OF THE DANGERS OF THE HIGHLY TOXIC PESTICIDES ?

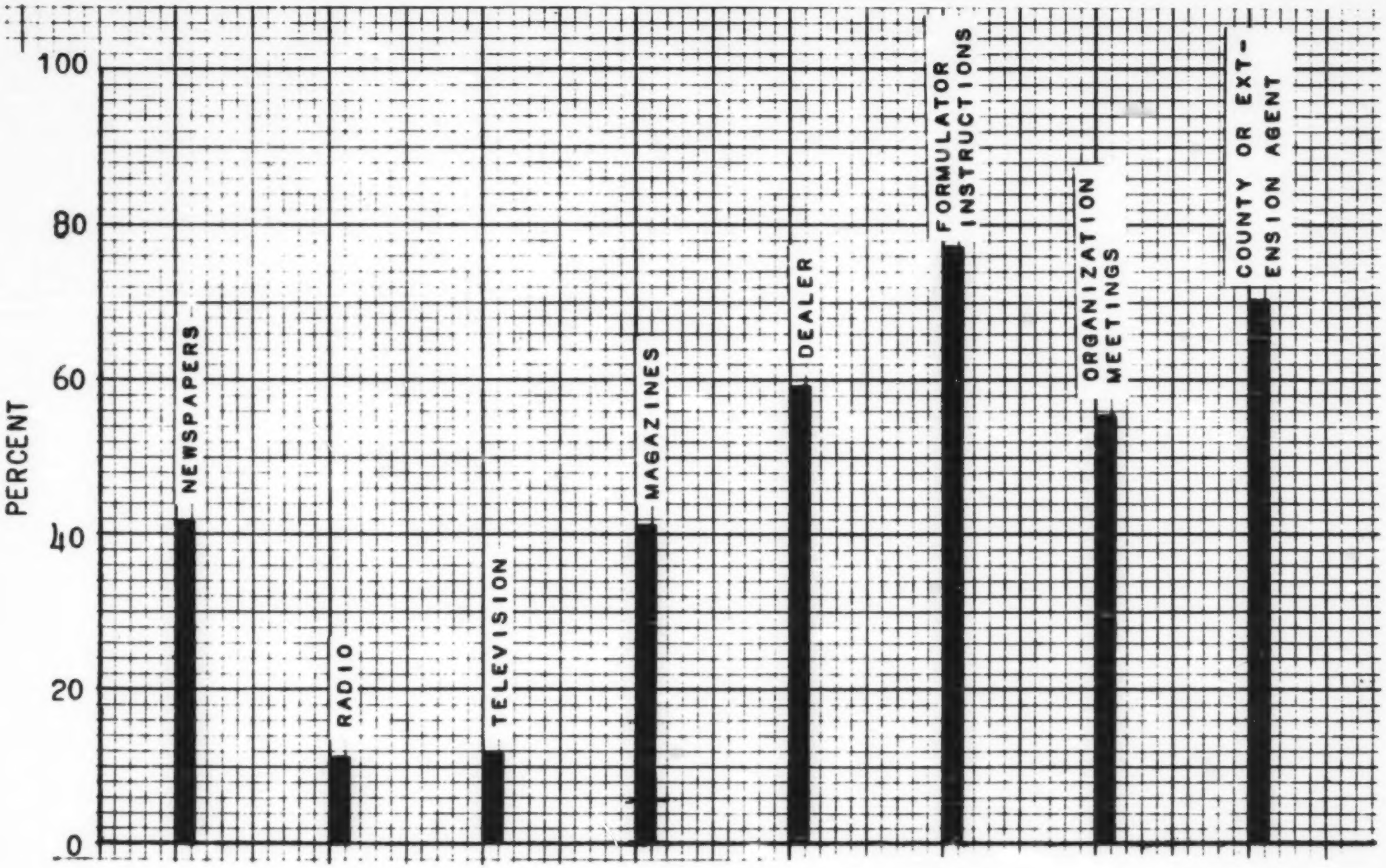

EXHIBIT XLI

RESPONSE TO
APPLICATOR QUESTIONNAIRE

QUESTION 12, WHEN MIXING HIGHLY TOXIC PESTICIDES WHICH OF THE FOLLOWING PROTECTIVE CLOTHING IS RECOMMENDED ?

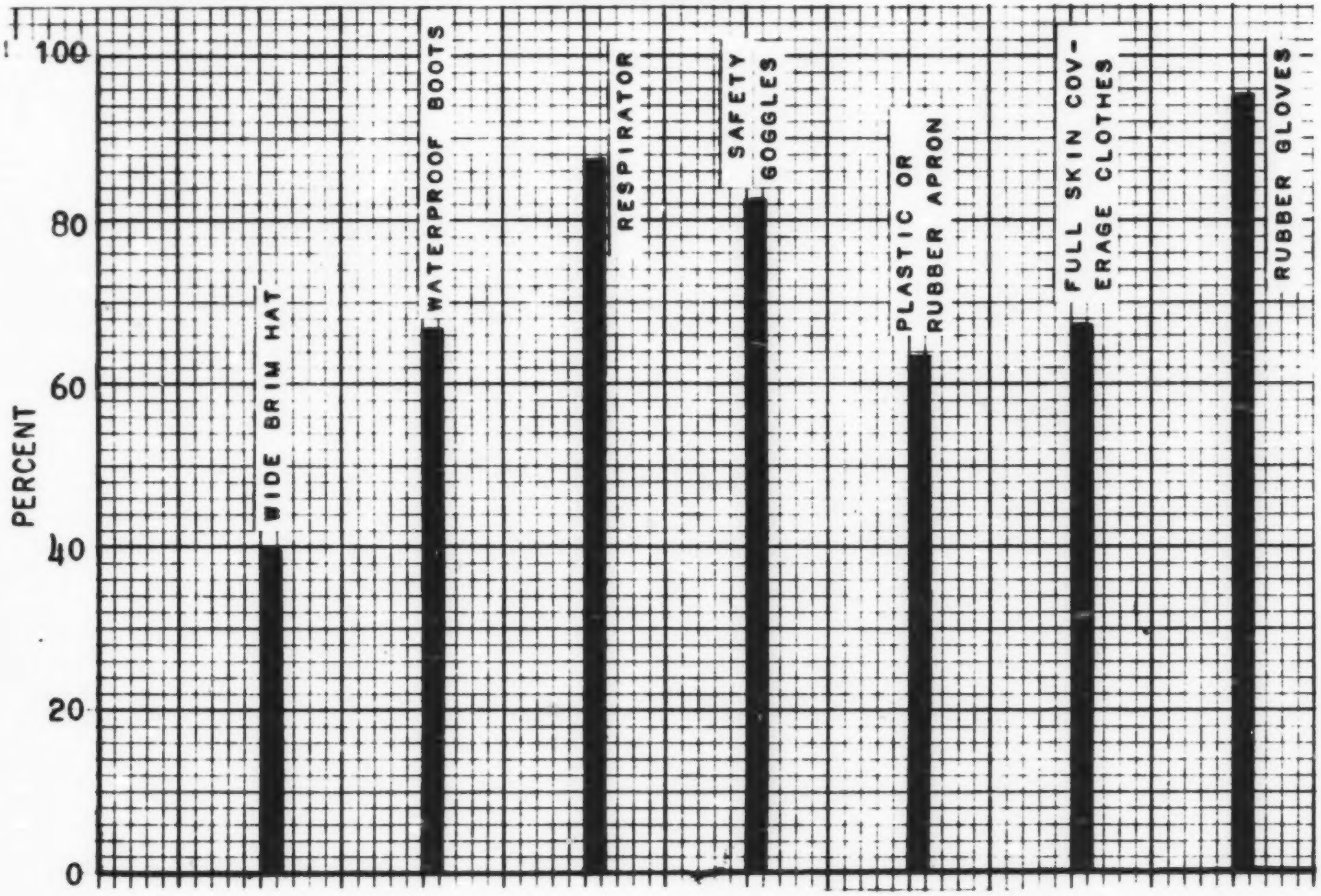

EXHIBIT XLII

RESPONSE TO

APPLICATOR QUESTIONNAIRE

QUESTION 13. EQUIPMENT FOR MIXING OR APPLYING PESTICIDES SHOULD BE CLEANED:

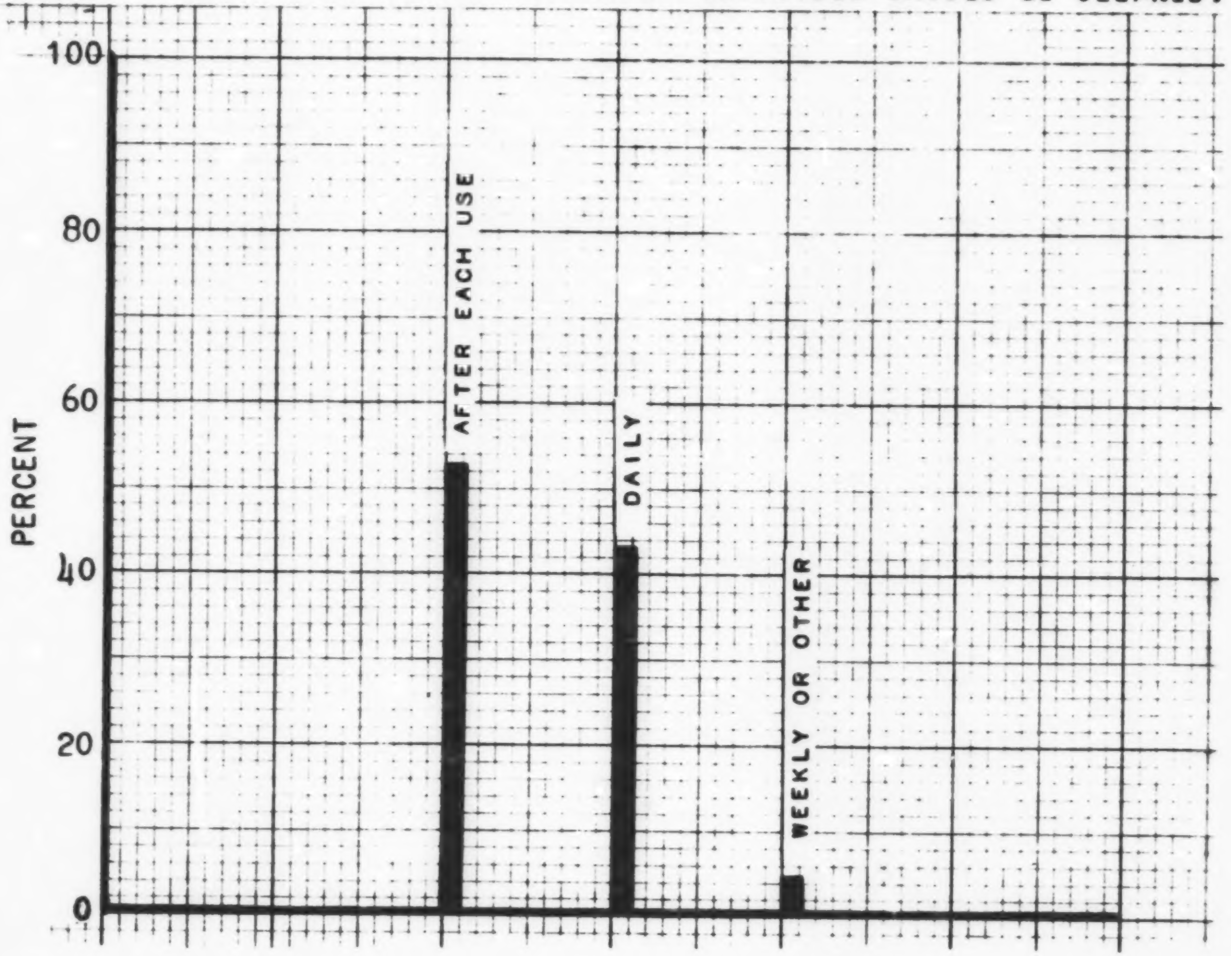

EXHIBIT XLIII

Form Approved
OMB No. 158-S73006

EVALUATION PROJECT SAFEGUARD

DEALER/FORMULATOR QUESTIONNAIRE

FOR

U. S. ENVIRONMENTAL PROTECTION AGENCY

1. How did you become aware of the dangers of the highly toxic pesticides? Check all that apply.

- ☐ Newspaper
- ☐ Radio
- ☐ Television
- ☐ Journals
- ☐ EPA Letter
- ☐ Formulator Literature
- ☐ Personal Contact
- ☐ Other ____________________

2. Did you instruct the purchaser of toxic pesticides to read and follow all directions and warnings on the package label?	Yes ☐	No ☐
3. Did you distribute pesticide warning and precautionary literature to your customers?	Yes ☐	No ☐
4. Was this literature prominently displayed and made easily available to a customer?	Yes ☐	No ☐
5. Did you stress the need for protective equipment to your customer when they purchased pesticides?	Yes ☐	No ☐
6. Did you stock protective equipment for sale to your customers?	Yes ☐	No ☐
7. Have you attended meetings or received instructions regarding safety procedures for handling highly toxic pesticides?	Yes ☐	No ☐

ALL INFORMATION SUPPLIED ON THIS QUESTIONNAIRE WILL BE KEPT CONFIDENTIAL AND WILL BE USED ONLY TO EVALUATE PROJECT SAFEGUARD

EXHIBIT XLIV

RESPONSE TO

DEALER FORMULATOR QUESTIONNAIRE

QUESTION 1. HOW DID YOU BECOME AWARE OF THE DANGERS OF HIGHLY TOXIC PESTICIDES ?

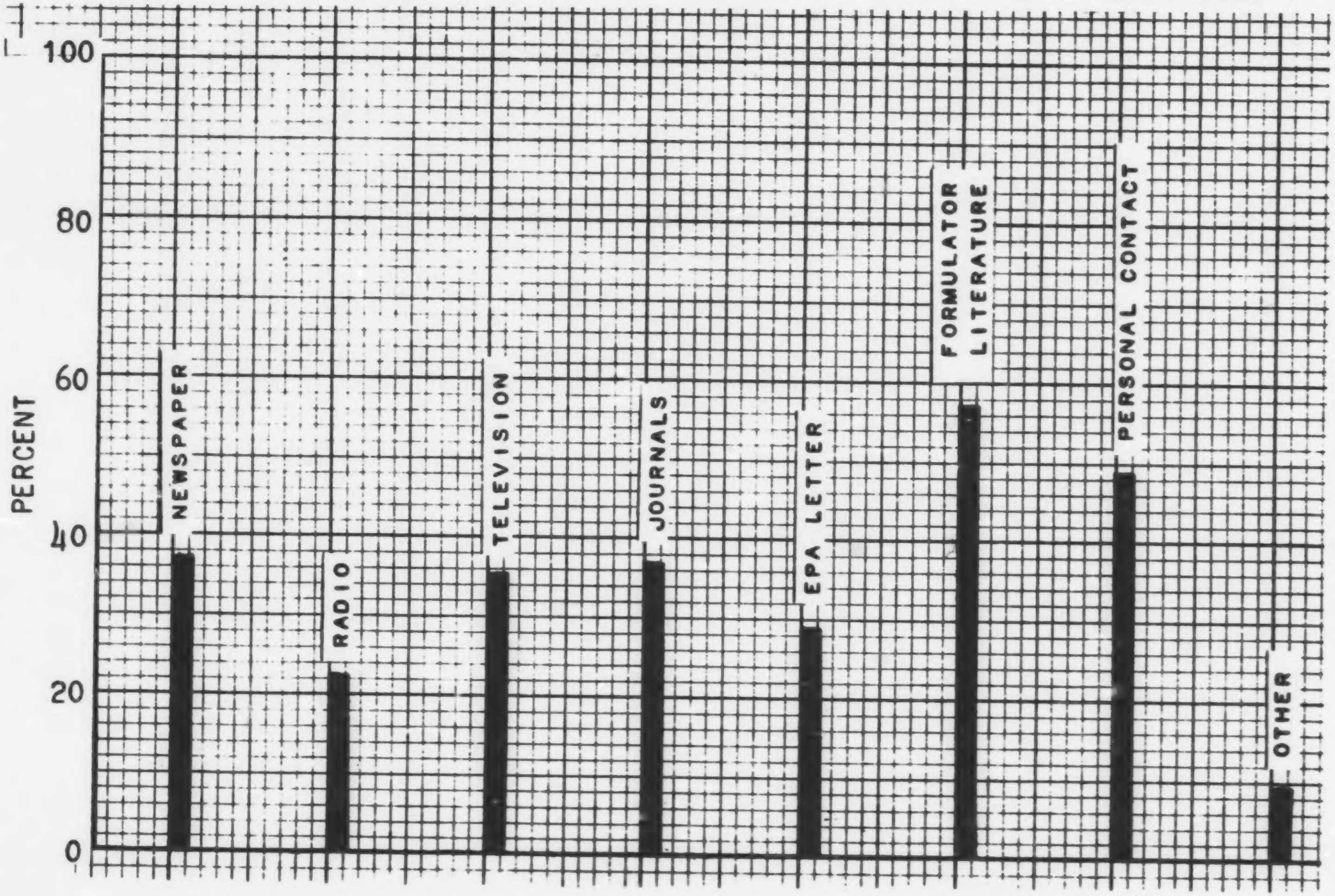

EXHIBIT XLV

RESPONSES TO

DEALER/FORMULATOR QUESTIONNAIRE